INTERMOUNTAIN POWER SERVICE CORPORATION

SPECIFICATIONS 45576

and

BIDDING DOCUMENTS

for

DESIGN, SUPPLY, AND INSTALLATION OF BOILER UPRATE MODIFICATIONS ON UNIT 1 AND UNIT 2

Return to Purchasing by August 6, 2002

Buyer: Ralph C. Newberry, C.P.M.

850 West Brush Wellman Road, Delta, Utah 84624 / Telephone: (435) 864-4414 / FAX: (435) 864-6670 / Fed. I.D. #87-0388573

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SPECIFICATIONS

PART A - DIVISION A1

NOTICE INVITING PROPOSALS

The Intermountain Power Service Corporation (IPSC) invites sealed bids for **Design, Supply, and Installation of Boiler Uprate Modifications on Unit 1 and Unit 2** in accordance with **Specifications 45576**, available in the Purchasing Section, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546.

Proposals shall be submitted on IPSC's bidding forms. All Proposals shall be filed with the Buyer at the above address on or before **August 6, 2002**.

Each Proposal shall be accompanied by a certified or cashier's check payable to Intermountain Power Agency (IPA), or a Surety Bond payable to IPA, IPSC, and the City of Los Angeles Department of Water and Power (LADWP) in the amount of 10 percent of the aggregate sum of the Proposal as a guarantee that the bidder shall execute the proposed Contract Agreement if awarded.

Proposals shall be subject to acceptance within, and irrevocable for, a period of ninety (90) calendar days after date of bid opening.

IPSC reserves the right to reject any and all Proposals.

The successful bidder shall furnish a Performance Bond equal to 10 percent of the estimated Contract amount, and shall keep the Performance Bond in place at all times thereafter until all obligations under the Contract have been discharged.

In the performance of any contract awarded, the bidder shall not discriminate in employment practices against any employee or applicant for employment because of race, religion, national origin, ancestry, sex, age, or physical disability.

Dated: July 22, 2002

Ralph C. Newberry 7-22-02

Ralph C. Newberry, C.P.M., Senior Buyer
Intermountain Power Service Corporation

PART B - DIVISION B1

INSTRUCTIONS TO BIDDERS

1. Form, Signature, and Delivery of the Proposals: The bidder's Proposal shall be made on the yellow copy of the Bidding Documents. The Specifications printed on white paper shall be retained by the bidder.

   The bidder's name, address, and the date shall be stated in the Proposal. The Proposal shall be signed by the person authorized to bind the bidder.

   The Proposal shall be enclosed in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the bidder. The envelope shall bear the words "Proposal for," followed by the Specification Number, the title of the Specifications, and the date and hour of bid opening.

   If the Proposal is mailed, it shall be addressed as follows:

   Purchasing Section
   Intermountain Power Service Corporation
   850 West Brush Wellman Road
   Delta, UT 84624-9546

   If the Proposal is sent by messenger, it shall be delivered to the Administration Building, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, Utah.

2. Interpretations and Addenda: Should a bidder find discrepancies or omissions in the plans, specifications, or other documents, or should there be doubt as to their true meaning, the bidder shall submit to the Buyer a written request for an interpretation or clarification thereof. A request for addenda, interpretation, or clarification shall be delivered to the Buyer marked "Request for Interpretation" and must be received by the Buyer in time to permit a reasonable response before the date of opening bids. Any interpretation of, or change in the documents will be made only by addendum issued to each person to whom Specifications have been issued and will become a part of any contract awarded. IPSC will not be responsible for or bound by any other explanations or interpretations.

3. Correspondence: All inquiries or correspondence to IPSC prior to award of Contract shall be addressed to the Buyer.

4. Changes or Alternatives: The bidder shall not change any wording in the documents. Any explanations or alternatives offered shall be submitted in a letter attached to the front of the Bidding Documents. Alternatives which do not substantially comply with IPSC's Specifications cannot be considered. Language of negation or limitation of any rights, remedies, or warranties provided by law will not be considered part of the Proposal. Bids offered subject to conditions or limitations may be rejected.

5. Specified Materials or Equivalent: Whenever any particular material or process is specified by a patent or proprietary name, by a trade or brand name, of a manufacturer, such wording is used for the purpose of describing the material or process, fixing the standard of quality required, and shall be deemed to be followed by the words "or equivalent." The bidder may offer any material or process which shall be the equivalent of that so specified, but the bidder must identify the equivalent offered.

6. Language: Everything submitted by the bidder shall be written in the English language.

7. Sales or Use Taxes: Prices quoted by the bidder shall not include any applicable sales or use taxes or Federal Excise Taxes.

8. Duties: Prices quoted by the bidder shall include all applicable duties.

9. Award of Contract: Any award of Contract will be made to the lowest and best, regular responsible bidder. The determination as to which is the lowest and best, regular responsible bidder may be made on the basis of the lowest ultimate cost of the materials, services, equipment, or other Work in place and use. The right is reserved to reject any or all Proposals.

   Within thirty (30) calendar days after the date of award of Contract, the successful bidder shall sign the Contract supplied by IPSC. The Contract will be effective upon execution by IPSC. Award of Contract is subject to execution of IPSC's form of Contract Agreement and other Contract Documents.

10. Comparison of Bids: Bid comparison will be based on the lowest ultimate cost and the Contractor's experience in similar jobs.

11. Bidder's Bond: The Proposal shall be accompanied by a certified check or a cashier's check issued by a responsible bank, payable in the state of Utah to the order of Intermountain Power Agency, in the amount of 10 percent of the aggregate sum of the Proposal. A surety bond payable to IPA, IPSC, and LADWP in a like amount will be accepted in lieu of a check.

12. Performance Bond: Within thirty (30) calendar days after date of award of Contract, the successful bidder shall furnish a Performance Bond, payable to IPA, IPSC, and LADWP equal to 10 percent of the estimated amount of the Contract.

13. Calculation of the Bonds: The estimated amount of the Proposal for the Bidder's Bond, or of the Contract for the Performance Bond, will be considered to be the price quoted by the bidder in the Proposal Schedule.

PART C - DIVISION C1

BIDDING DOCUMENTS

BIDDER'S BOND

(Not necessary when certified or cashier's check accompanies bid. See below*.)

SURETY BOND

We, the undersigned Principal and Surety, acknowledge ourselves jointly and severally bound to Intermountain Power Agency (IPA) and Intermountain Power Service Corporation (IPSC) of the state of Utah, and the City of Los Angeles Department of Water and Power (LADWP), in the sum of _____ Dollars ($_____), to be paid to IPA if the attached Proposal shall be accepted and the proposed Contract awarded to said bidder, and said bidder shall fail to execute the Contract and bond for the faithful performance thereof; otherwise this obligation to be void.

Dated: _____, 20___

Firm Name: _____

_____

By: _____
(Signature)**

(Surety): _____

By: _____
(Signature)

*When bidder is submitting a check in lieu of a bond, the check must be made payable to Intermountain Power Agency, must either be certified by a responsible bank or be a cashier's check issued by a responsible bank, and must be payable in the state of Utah.

If check is submitted herewith, state check number _____ and amount $_____

**See Form, Signature, and Delivery of the Proposals, Division B1

NOTE: All signatures above must be written in ink.

PROPOSAL

The undersigned hereby proposes to furnish and deliver manpower and material to the Intermountain Power Service Corporation for **Design, Supply, and Installation of Boiler Uprate Modifications on Unit 1 and Unit 2** in accordance with **Specifications 45576**.

The undersigned agrees, upon the acceptance of this Proposal, (a) to execute IPSC's form of Contract (including the Contract Agreement and other Contract Documents identified in said Specifications) for furnishing and delivering the items and services embraced in the accepted Proposal, (b) to perform its obligations under the Contract at the prices stated in the accompanying Proposal Schedule, and (c) to furnish a Performance Bond conditioned upon the faithful performance of the Contract.

The undersigned furthermore agrees that, in case of failure to execute such Contract Agreement and provide the necessary Performance Bond, the check or Bidder's Bond accompanying this Proposal, and the monies payable thereon, shall be forfeited to and remain the property of Intermountain Power Agency.

The undersigned declares under penalty of perjury that this Proposal is genuine, is not a sham or collusive, and is not made in the interest or in behalf of any person or entity not herein named. The undersigned further declares under penalty of perjury that the bidder has not directly or indirectly induced or solicited any other bidder to submit a sham bid, or any other person, firm, or corporation to refrain from bidding. The undersigned also declares under penalty of perjury that the bidder has not in any manner sought by collusion to secure for itself an advantage over any other bidder.

I declare under penalty of perjury under the laws of the state of Utah that the foregoing is true and correct.

Date: _____, 20_____

Bidder: _____

Address: _____

_____

Signed By: _____
(Authorized Signature)

Print Name: _____

Title: _____

Spec. 45576

Contract No. _____

Bond No. _____

LABOR, MATERIAL, AND PERFORMANCE BOND

1. Know all persons by these presents, that

_____

(Insert Contractor's name and address or legal title.)

_____

as Principal, hereinafter called Contractor, and

_____

as Surety, hereinafter called Surety, are held and firmly bound unto Intermountain Power Agency, Intermountain Power Service Corporation, hereinafter called IPSC, and the City of Los Angeles Department of Water and Power, as Obligees, in the amount of _____ Dollars ($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS, Contractor has by written agreement dated _____, 20___, entered into a Contract Agreement with IPSC for _____ in accordance with **Contract No.** _____ which Contract is attached hereto and by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE,

3. THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants for labor and material used or supplied for use in the performance of the Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

4. Whenever Contractor shall be, and declared by IPSC to be, in default under the Contract, IPSC having performed IPSC's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

   a. Complete the Contract in accordance with its terms and conditions, or

   b. Obtain a bid or bids for submission to IPSC for completing the Contract in accordance with its terms and conditions, and upon determination by IPSC and Surety of the lowest and best, regular responsible bidder acceptable to IPSC, arrange for a Contract between such bidder and IPSC, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of Completion arranged under this

paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price, but not exceeding the amount of the Bond. The term "Balance of the Contract price," as used in this paragraph, shall mean the total amount payable to Contractor under the Contract and any amendments thereto, less the amount previously paid to Contractor.

5. Upon failure of Contractor to timely pay laborers and material men, Surety agrees to discharge such obligation in an amount not exceeding the sum set forth above and also, in case suit is brought upon this Bond, a reasonable attorney's fee to be fixed by the court. This Bond shall inure to the benefit of any and all persons named in Title 14, Chapter 2, Utah Code, as amended, so as to give a right of action to such persons or their assigns in any suit brought upon this Bond.

6. No right of action shall accrue on this Bond to or for the use of any person or corporation other than named herein, or the heirs, executors, administrators, or successors and assigns of the Obligees, except as provided by statutory or regulatory provisions relating to Contractor's bonds upon public and private contracts, the provisions of which are made a part hereof as a supplemental description of Surety's obligations herein.

7. Surety hereby waives notice of any change orders or extensions of time made by IPSC in accordance with the terms of the Contract.

8. SIGNED AND SEALED this _____ day of _____ A.D. 20_____

In the presence of: _____
(Principal)

(Seal)

_____ _____
(Witness) (Title)

_____
(Seal) (Surety)

_____ _____
(Witness) (Title)

PART C- DIVISION C2

BIDDING DOCUMENTS - PROPOSAL SCHEDULE

Proposal is hereby made to furnish and deliver to IPSC manpower and material as required for **Design, Supply, and Installation of Boiler Uprate Modifications on Unit 1 and Unit 2**, F.0.B. Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT, in accordance with **Specifications 45576**, the following:

1. Bid Submittal: Each bidder shall include the following information with their bid:

   a. Approximate engineering, material manufacturing, and delivery schedule.

   b. Proposed installation plan (see Division F2, Article 4).

   c. Proposed subcontractor list (including contacts, references, and telephone numbers.) All subcontractors shall be approved by the Contract Administrator prior to mobilization.

   d. A required access plan showing location and extent of all required scaffolding in the event IPSC elects to provide all required scaffolding.

2. Prices: Each bidder shall complete and submit the following pricing schedule. Prices are to be stand-alone, line item pricing, unless specified otherwise by the bidder or indicated otherwise within the following line items:

ITEM	BID UNIT 1	BID UNIT 2
a. Preparation and implementation of a boiler model designed to accurately represent IPP's Unit 1 and Unit 2. Boiler model to provide the technical basis for optimization of boiler performance as identified with the attached Specifications.	_____	_____
b. Design, procure, fabricate, and deliver an 8 foot platen pendant tube extension set, including alignment appurtenances for Unit 1, beginning March 1, 2003 and Unit 2, beginning February 28, 2004. (Unit 2 procurement release contingent upon successful installation of Unit 1.)	_____	_____

	ITEM	BID UNIT 1	BID UNIT 2
c.	Installation of 8 foot platen pendant tube extension sets on Unit 1 and Unit 2. (Installation of Unit 1 will be awarded to the material supply bidder. Award of Unit 2 extensions will be based on Unit 1 experience.)	_____	_____
d.	Design, procure, fabricate, deliver, and install an overfire air (OFA) system on Unit 1 and Unit 2 to achieve NOx output reduction of 15 percent reduction and a maximum NOx operating output of 0.40 lbs/MMBTU on Unit 1 experience.	_____	_____
e.	Design, procure, fabricate, deliver, and install a complete OFA system for maximum allowable NOx reduction with the existing combustion system hardware presently in use at IPP.	_____	_____
f.	Installation of two-hundred fifty (250), IPSC supplied, split-ring castings on the intermediate superheat pendants.	_____	_____
g.	Design, procure, deliver, install, and remove a complete scaffold structure for all applicable boiler internal work on Unit 1 and Unit 2. (Boiler internal scaffold is detailed within the attached Specifications.)	_____	_____
h.	Provide technical service support as needed throughout the Project, including a minimum of two (2) weeks on-site technical support during startup and tuning, and one (1) additional week for technical support during operational testing of the boiler following the outage.	_____	_____

Cash Terms: A discount for prompt payment is offered of _____ percent for Contract payments made within _____ calendar days after date of acceptance or delivery and receipt of invoice.

Taxes: The foregoing quoted prices are exclusive of all applicable sales and use taxes.

Form of Business Organization: The bidder shall state below the form of its business organization.

Bidder is a: _____, organized under the laws of the state of _____.
(Corporation, Partnership, Limited Partnership, Individual)

If a partnership, the bidder shall state below the names of the partners. If a corporation, the bidder shall state below the names of the president and of the secretary.

_____ _____

Person to Contact: Should IPSC desire information concerning this Proposal, please contact:

Name: _____ Telephone No: _____

Address: _____

(If different, the address of bidder's chief executive office is:) _____

_____

PART D - DIVISION D1

CONTRACT DOCUMENTS DESCRIPTION

The Contract Agreement, together with the documents listed in Article III thereof, the reference Specifications, any other documents listed below, and such of Contractor's Proposal documents as are expressly agreed to by IPSC shall constitute the Contract (Contract). Said Documents are complementary and require complete and finished Work. Anything shown or required of Contractor in any one or more of said documents shall be as binding as if contained in all of said documents. Contractor shall not be allowed to take advantage of any error, discrepancy, omission, or ambiguity in any document, but shall immediately report to the Chief Operations Officer, in writing, any such matter discovered. The Chief Operations Officer will then decide or correct the same and the decision will be final.

The following drawings are being provided for reference purposes only. Dimensions on these drawings are not guaranteed by IPSC.

DRAWINGS

950 MW Unit Test Data (Excel File)
Boiler Buckstays
Boiler Front Wall
Boiler Loading Diagram (Sheet 1)
Boiler Loading Diagram (Sheet 2)
Boiler Plan View
Boiler Front Wall (Sheet 1)
Boiler Front Wall (Sheet 2)
Boiler Side Elevation
Boiler Structural Steel (South)
Furnace Front Wall Panel
Secondary Superheat Inlet
Secondary Superheat Platen
Burner Port (60A)
Corner Insulation (40N)
Corner Port Insulation (44G)
Insulation Key
Insulation Specification
Waterwall Insulation (45H)
Windbox Insulation (ITP4.0)
Windbox Insulation

Drawings prepared by the Contractor for this Project shall be submitted to IPSC for review prior to commencement of fabrication. This review shall not relieve the successful bidder of sole responsibility for the adequacy and correctness of the associated Work. All Project drawings shall be stamped by a registered professional engineer, licensed within the state of Utah.

PART E - DIVISION E1

GENERAL CONDITIONS

1. Definitions: The following words shall have the following meanings:

   a. Bidder: The person, firm, or corporation adopting and submitting a Proposal under these Specifications.

   b. Buyer: The Purchasing Agent for IPSC.

   c. Chief Operations Officer: The President and Chief Operations Officer of IPSC, or other representatives designated by the President and Chief Operations Officer acting within the limits of their authority.

   d. Contract Administrator: The IPSC employee designated by the Chief Operations Officer with primary responsibility for administration of the Contract, or other representatives designated by the Contract Administrator acting within the limits of their authority.

   e. Contractor: The person, firm, or corporation to whom the Contract is awarded.

   f. Directed, Required, Approved, etc.: The words *directed, required, approved, permitted, ordered, designated, prescribed, instructed, acceptable, accepted, satisfactory,* or similar words shall refer to actions, expressions, and prerogatives of the Contract Administrator unless otherwise expressly stated.

   g. Gallon: Liquid volume of 231 cubic inches at 60 degrees Fahrenheit.

   h. IGS: Intermountain Generating Station located at 850 West Brush Wellman Road, Delta Utah 84624.

   i. IPA: Intermountain Power Agency, the owner of Intermountain Power Project, and a political subdivision of the state of Utah, organized and existing under the Interlocal Co-operation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended.

   j. IPP: Intermountain Power Project, consisting of Intermountain Generating Station, Intermountain Railcar, Intermountain Converter Station, Adelanto Converter Station, Intermountain AC Switchyard and associated transmission lines, microwave stations, and support facilities.

   k. IPSC: Intermountain Power Service Corporation, a nonprofit corporation, furnishing personnel to support the Operating Agent in the performance of operation and maintenance.

l. Operating Agent, or LADWP: The City of Los Angeles Department of Water and Power which is responsible for operation and maintenance for IPP.

m. Reference Specifications: Those bulletins, standards, rules, methods of analysis or tests, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in these Specifications. These refer to the latest edition, including amendments published and in effect at the date of the Invitation for Proposal, unless specifically referred to by edition, volume, or date. Unless the context otherwise requires, Reference Specifications also include all amendments published or adopted after the date of the Invitation for Proposal.

n. Subcontractor: A person, firm, or corporation, other than Contractor and employees thereof, who supplies labor, materials, or services, for a portion of the Work to be performed by Contractor under this Contract.

o. Ton: The short ton of 2000 pounds (lbs).

p. Work: The materials, services, equipment, and other performance identified in these Specifications and other Contract Documents to be provided by Contractor.

2. Materials and Work: All Work shall comply with these Specifications. All materials used or supplied, and all equipment furnished, shall be new and unused; however, this requirement shall not preclude the use of recycled materials in the manufacturing processes. All Work shall be done by qualified workers in a thorough and workmanlike manner that would pass without objection in both Contractor's trade and IPA's and IPSC's industry. Materials, equipment, workmanship, and other Work not definitely specified, but incidental to and necessary for the Work, shall conform to the best commercial practice for the type of Work in question and be of a quality that passes without objection in Contractor's trade and IPA's and IPSC's industry.

3. Nondiscrimination: The applicable provisions of Executive Order No. 11246 of September 24, 1965, and Bureau of Land Management regulations, and all other applicable governmental regulations pertaining to nondiscrimination in employment in the performance of contracts, are incorporated herein by reference, and made a part hereof as if they were fully set forth herein. During the performance of this Contract, Contractor shall not discriminate in its employment practices against any employee or applicant for employment because of the employee's or applicant's race, religion, national origin, ancestry, sex, age, or physical disability. All subcontracts awarded under or pursuant to this Contract shall contain a like nondiscrimination provision.

4. Governing Law; Venue: This Contract shall be governed by the substantive laws of the state of Utah, regardless of any rules on conflicts of laws or choice of law that would otherwise cause a court to apply the laws of any other state or jurisdiction. Any action, in law or in equity, concerning any alleged breach of or interpretation of this Contract, or

concerning any tort in relation to this Contract or incidental to performance under this Contract, shall be filed only in the state or federal courts located in the state of Utah.

5. Patents and Intellectual Property: Contractor shall fully indemnify and, at the election of IPA, defend IPA, IPSC, and the Operating Agent against any and all liability, whatsoever, by reason of any alleged infringement of any intellectual property rights (including, but not limited to, patents, copyrights, trademarks, or trade secrets) on any article, process, method, or application used in any designs, plans, or specifications provided under this Contract, or by reason of Contractor's manner of performance under this Contract, or by reason of use by IPA, IPSC, or the Operating Agent of any article, process, or material specified by Contractor.

6. Contractor's Address and Legal Service: The address given in the Proposal shall be considered the legal address of Contractor and shall be changed only by advance written notice to IPSC. Contractor shall supply an address to which certified mail can be delivered. The delivery of any communication to Contractor personally, or delivery to such address, or the depositing in the United States Mail, registered or certified with postage prepaid addressed to Contractor at such address, shall constitute a legal service thereof.

7. Assignment of Contract Prohibited: Contractor shall not assign or otherwise attempt to dispose of this Contract, or any rights hereunder, or of any monies due or to become due hereunder, unless authorized by the prior written consent of the Chief Operations Officer. This Contract, and Contractor's rights hereunder (including rights of collection) are nonassignable without the Chief Operations Officer's prior written consent. No right or claim can be asserted against IPA, IPSC, or the Operating Agent, in law or equity, by any person, by reason of any assignment or disposition unless so authorized.

   If Contractor, without such prior written consent, purports to assign or dispose of this Contract, or any right or interest hereunder, IPSC may at its option terminate this Contract. Such termination shall relieve and discharge IPA, IPSC, and the Operating Agent from any and all liability, duties, and obligations to Contractor, and to any assignee or transferee thereof.

8. Quality Assurance: IPSC has the right to subject any or all materials, services, equipment, or other Work furnished and delivered under this Contract to rigorous inspection and testing. (Unless otherwise specifically provided in this Contract with respect to specific materials, services, equipment, or other Work, IPSC has no duty to inspect, test, or specifically accept.) Before offering any materials, services, equipment, or other Work for inspection, testing, delivery, or acceptance, Contractor shall eliminate all items or portions which are defective or do not meet the requirements of these Specifications. If any items or portions are found not to meet the requirements of these Specifications, the lot, or any faulty portion thereof, may be rejected. Only the Contract Administrator may accept any materials, services, equipment, or other Work as complying with these Specifications on behalf of IPSC.

IPSC may inspect and reject materials, services, equipment, or other Work tendered or purchased under this Contract at any reasonable location IPSC may choose (including, but not limited to, points of origin, while in transit to IPSC, IPSC's specified receiving points, IPSC's storage sites, or any point of use or installation). Inspection can include any testing that IPSC deems necessary or convenient to determine compliance with these Specifications. The expense of any initial tests will be borne by IPSC. All expenses of subsequent or additional tests will be charged against Contractor when due to failure of first-offered materials, services, equipment, or other Work to comply with these Specifications.

The fact that the materials, services, equipment, or other Work have or have not been inspected, tested, or accepted by IPSC, whether voluntarily or as required by any specific provision in this Contract, shall not relieve Contractor of responsibility in case of later discovery of nonconformity, flaws, or defects, whether patent or latent.

9. Extra Work, Reduced Work, and Change Orders by IPSC: IPSC reserves the right at any time before final acceptance of the entire Work to order Contractor to furnish or perform extra Work, or to make changes altering, adding to, or deducting from the Work, without invalidating this Contract. Changes shall not be binding upon either IPSC or Contractor unless made in writing in accordance with this Article.

Changes will originate with the Chief Operations Officer who will transmit to Contractor a written request for a Proposal covering the requested change, setting forth the changed Work in detail, and including any required supplemental plans or specifications. Upon receipt of such request, Contractor shall promptly submit in writing to the Chief Operations Officer a Proposal offering to perform such change, a request for any required extension of time caused by such change, and an itemized statement of the cost or credit for the proposed change. Failure of Contractor to include a request for extension of time in the Proposal shall constitute conclusive evidence that such extra Work or revisions will entail no delay and that no extension of time will be required.

If Contractor's Proposal is accepted by IPSC, a written change order will be issued by the Chief Operations Officer stating that the extra Work or change is authorized and granting any required adjustments of the Contract price and of time of completion. If Contractor's Proposal is rejected by IPSC, then IPSC may order the additional or changed Work from other vendors.

Additional Work or changes pursuant to the change order shall be performed in accordance with the terms and conditions of these Specifications. No extra Work shall be performed or change made unless pursuant to such written change order, and no claim for an addition to the Contract price shall be valid unless so ordered.

Notwithstanding anything in the preceding paragraphs to this Article, IPSC may issue a written order reducing the scope of the Work without issuing a request for Proposal. Any such reduction in the scope of Work shall be effective upon issuance. Reductions

ordered by IPSC shall constitute partial terminations and shall reduce the price to be paid by IPSC.

10. Changes at Request of Contractor: Changes may be made to facilitate the Work of Contractor. Such changes may only be made without additional cost to IPSC, without extension of time, and pursuant to written permission from the Chief Operations Officer. Permission for such changes shall be requested in writing by Contractor to the Chief Operations Officer.

11. Time is of the Essence and Extensions of Time: Time is of the essence to this Contract. Delivery and other performance of Work must be completed within the times and by the dates specified. Time for delivery or other performance of Work shall not be extended except as provided in this Article. Failure to deliver or otherwise perform Work within the times and by the dates specified shall constitute a default and be grounds for IPSC to immediately terminate this Contract.

If Contractor makes a timely written request in accordance with this Article, the time for delivery or other performance of Work will be extended by a period of time equivalent to any delay in the whole Work which is: (a) authorized in writing by the Chief Operations Officer, (b) caused solely by IPSC, or (c) due to unforeseeable causes (such as war, strikes, or natural disasters) and which delay is beyond the control and without the fault or negligence of Contractor and subcontractors.

Contractor shall promptly notify the Chief Operations Officer in writing at both the beginning and ending of any delay, of its cause, its effect on the whole Work, and the extension of time claimed. Failure of Contractor to provide such written notices and to show such facts shall constitute conclusive evidence that no excusable delay has occurred and that no extension of time is required.

The Chief Operations Officer will ascertain the facts and the extent of the delay and will extend the time for delivery when the findings of fact justify such an extension. The Chief Operations Officer's determination will be final and conclusive.

IPSC will be responsible for granting extensions of time as herein provided, but will not otherwise be responsible in any manner or liable to any extent for damage directly or indirectly suffered by Contractor as a result of any delay.

12. Protests and Claims: If Contractor considers any demand of the Chief Operations Officer to be outside of the requirements of this Contract, or considers any amount of payment, or any record, ruling, or other act, omission, or determination by the Chief Operations Officer to be unreasonable, Contractor shall promptly deliver to the Chief Operations Officer a written statement of the protest and of the amount of compensation or nature of accommodation, if any, claimed.

Upon written request by the Chief Operations Officer, Contractor shall provide access to all records containing any evidence relating to the protest or claim.

Upon review of the protest, claim, and evidence, the Chief Operations Officer will promptly advise Contractor in writing of the final decision which will be binding on all parties.

The requirements of this Article shall be in addition to, and shall not be construed as waiving claims provisions of the Statutes of the state of Utah. Contractor is deemed to have waived and does waive all claims for extensions of time and for compensation in addition to the Contract price except for protests and claims made and determined in accordance with this Article.

13. Limitation of Liability; Responsible Party: It is understood and agreed that IPA shall be the sole party or person liable to Contractor for payments under or pursuant to this Contract, and for any breaches, defaults, or for any torts in the performance of or in relation to this Contract by IPA, IPSC, or the Operating Agent, or any officers, agents, or employees thereof. Contractor hereby expressly covenants and agrees that no suit shall be brought by Contractor against IPSC, or the Operating Agent, or their or IPA's officers, agents, or employees, or any of the purchasers of power from IPA, but that all rights or remedies that Contractor may have or that may arise under or in relation to this Contact shall be asserted by Contractor solely against IPA. Without limiting the foregoing provisions of this Article, Contractor shall have no right against any of the foregoing (including IPA) to assert or recover in contract or in tort, damages or losses in the nature of consequential damages, incidental damages, punitive, or exemplary damages.

14. Independent Contractor: Contractor shall perform all Work as an independent contractor in the pursuit of its independent calling. Contractor is not an employee, agent, joint venturer, partner, or other representative of IPA, IPSC, or the Operating Agent and shall be under the control of IPSC only to provide the services requested and not as to the means or manner by which the Work is to be accomplished. Contractor has no authority to act for, bind, or legally commit IPA, IPSC, or the Operating Agent in any way.

15. Drug Policy: Contractor shall submit a current copy of its drug policy for review. IPP facilities are a drug free and zero tolerance workplace. Contractor's employees and its subcontractors' employees who are to perform Work or otherwise be at the IPP facilities shall participate in a drug testing program prior to arrival, and at any additional time(s) during this Contract as IPSC may request.

16. Security and Safety Compliance: Contractor and its employees, agents, representatives, and/or subcontractors, while performing Work on IPP plant site, or

who are otherwise on IPA premises, shall fully comply with all security, fire prevention, safety rules, and procedures in force at IPP. IPSC has the right (but not duty) to make periodic and random inspections of the persons, and of their respective property, upon entering, at any time while on, and when departing any IPA or IPP facility. Such persons subject to inspection include Contractor, any subcontractor, and their respective employees, agents, and representatives. Property subject to inspection includes, but is not limited to, vehicles, clothing, toolboxes, lunch boxes, any other carrying case, tools or equipment, and anything contained therein.

All Contractor's employees will be given security identification badges by IPSC and those badges shall be displayed each day to allow admittance to the IPP plant site. Contractor's employees who do not have security identification badges in their possession, will not be allowed on site unless signed in by the Contract Administrator. All security badges shall be returned to the Security Contractor when the employee terminates their work at IPP plant site. All Contractor's vehicles will also receive parking stickers from the Security Contractor allowing entrance to the IPP plant site. Temporary badges and parking stickers are available for intermittent Contractor employees and vehicles.

Contractor shall have access to the IPP plant site between the hours of 7:00 am to 7:00 pm Monday through Friday. Access may be allowed on weekends or at other times with the approval of the Contract Administrator.

Contractor will be directed to specified areas for parking vehicles and equipment by the Contract Administrator. Certain areas of the IPP plant site are restricted to IPSC vehicles only. Exceptions to the parking restriction will be made on an as needed basis through Contractor's respective Contract Administrator. Contractor shall make its employees, agents, representatives, and/or subcontractors aware of all areas that are subject to restricted parking.

17. Nonexclusive: This is a nonexclusive Contract. IPSC reserves the right to obtain materials, services, equipment, or other Work from other vendors or suppliers.

PART E - DIVISION E2

ADDITIONAL GENERAL CONDITIONS

1. Guarantee: Contractor guarantees and warrants for a minimum period of **two (2) years** after delivery and installation, and for such longer period as may be specified by the applicable statute of limitations, that all materials, services, equipment, and other Work furnished are free from defects and otherwise conform to the terms of this Contract, including, but not limited to, the Article entitled "Materials and Work" in Part E, Division E1, General Conditions.

   Contractor shall repair or replace, as IPSC may direct, all defective materials, services, equipment, or other Work. Such repair or replacement shall be F.O.B. at such destination as IPSC may direct (contract delivery point, point of installation, point of consumption, etc.). IPSC's right to demand repair or replacement is in addition to any other remedies that may be available for breach of the foregoing guarantee and warranty.

   Contractor shall, for the protection and benefit of IPA, IPSC, and LADWP, obtain guarantees conforming to the foregoing two (2) paragraphs from each of its vendors and subcontractors with respect to their materials, services, equipment, or other portion of the Work. Such guarantees from vendors and subcontractors shall be in addition to, and not in lieu of, Contractor's own guarantees.

2. Payment: Payment will be made within thirty (30) calendar days after delivery and receipt of the invoice in the form directed by IPSC.

3. Work Slips and Invoices: Contractor shall furnish Work slips suitable for recording (e.g., - the weight of concentrated sulfuric acid in tons), at the time of each delivery. IPSC may direct the form of Work slips to be used. Accuracy of completed Work slips shall be subject to verification by IPSC, who will retain the original copies.

   At the expiration of each calendar month during which material or Work is delivered, Contractor shall render an invoice and copies of signed Work slips (e.g., - the total weight of acid) delivered during said month.

   Invoices shall be submitted in duplicate to Accounts Payable, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546. All letters pertaining to invoices shall be addressed to the foregoing address.

   IPSC may direct the form of invoice to be used. All invoices shall show the Contract number, release number, or other identification of each delivery covered by the invoice. In all cases, the amount of the applicable sales tax or use tax shall be separately stated on the invoice.

4. Regulations, Permits, Licenses, and Warrants: Contractor shall comply with all applicable federal, state, and local regulations including, but not limited to, Federal and

State OSHA, as said regulations relate to this Contract, Contractor's performance or Contractor's trade. In addition, Contractor shall ensure that all permits, licenses, and warrants relating to this Contract, Contractor's performance, and Contractor's trade be acquired.

5. Letters to IPSC: All inquiries relating to these Specifications prior to award of Contract shall be addressed to the Buyer.

After award of Contract, all letters pertaining to performance of the Contract (other than invoice) shall be addressed as follows:

President and Chief Operations Officer
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624-9546

Attention: Contract Administrator

Regarding **Contract No. 03-45576**

PART F - DIVISION F1

DETAILED SPECIFICATIONS - SPECIAL CONDITIONS

1. General: Under the terms of this Contract, Contractor shall furnish and deliver **Design, Supply, and Installation of Boiler Uprate Modifications on Unit 1 and Unit 2** ordered by IPSC during the period of **two (2) years** beginning with date stated in the first introductory paragraph of the Contract Agreement (hereinafter called the Contractual Period).

2. Printed Documents: All printed documents, including drawings and instruction books, if applicable, shall be in the English language. All units of measurement shall be in the English foot-pound-second system.

3. Indemnity Clause: Contractor undertakes and agrees to indemnify, hold harmless, and at the option of IPA, defend IPA, IPSC, LADWP, and any and all of their boards, officers, agents, representatives, employees, assigns, and successors in interest from and against any and all suits and causes of action, claims, charges, costs, damages, demands, expenses (including, but not limited to, reasonable attorneys' fees and cost of litigation), judgments, civil fines and penalties, liabilities or losses of any kind or nature, including, but not limited to, violations of regulatory law, breach of contract, death, bodily injury or personal injury to any person, including Contractor's employees and agents, or damage or destruction to any property of either party hereto, or of third persons, arising in any manner by reason of or incident to the performance of this Contract on the part of Contractor, or Contractor's officers, agents, employees, or subcontractors of any tier, except as may be caused by the sole negligence of IPA, IPSC, LADWP, or their boards, officers, agents, representatives, or employees.

4. Insurance Requirements: Prior to the start of Work, but not later than thirty (30) calendar days after date of award of Contract, Contractor shall furnish IPSC evidence of coverage from insurers acceptable to IPSC and in a form acceptable to IPSC's Insurance Analyst. Such insurance shall be maintained by Contractor and at Contractor's sole cost and expense.

   Such insurance shall not limit or qualify the liabilities and obligations of Contractor assumed under this Contract. IPA, IPSC, or LADWP shall not, by reason of any of their inclusion under these policies or otherwise, incur liability to the insurance carrier for payment of the premium for these policies.

   Any insurance carried by IPA, IPSC, or LADWP which may be applicable is and shall be deemed excess insurance, and Contractor's insurance is and shall be primary for all purposes despite any provision in Contractor's policies to the contrary.

   Should any portion of the required insurance be on a "Claims Made" policy, Contractor shall, at the policy expiration date following completion of the Work, provide evidence

that the "Claims Made" policy has been renewed or replaced with the same limits and terms and conditions of the expiring policy at least for the Contract under which the Work was performed.

a. Workers' Compensation/Employer's Liability: Workers' Compensation Insurance covering all of Contractor's employees in accordance with the laws of all states in which the Work is to be performed and including Employer's Liability Insurance, and as appropriate, Broad Form All States Endorsement, Voluntary Compensation, Longshoremen's and Harbor Workers' Compensation, Jones Act, and Outer-Continental Shelf coverages. The limit for Employer's Liability coverage shall be not less than $3 million each accident and shall be a separate policy if not included with Workers' Compensation coverage. Evidence of such insurance shall be an endorsement to the policy providing for a thirty (30) calendar days prior written notice of cancellation or nonrenewal of a continuous policy to IPSC, by receipted delivery, and a Waiver of Subrogation in favor of IPA, IPSC, and LADWP, its officers, agents, and employees. Workers' Compensation/Employer's Liability exposure may be self-insured provided that IPSC is furnished with a copy of the certificate issued by the state authorizing Contractor to self-insure. Contractor shall notify IPSC, by receipted delivery, as soon as possible of the state withdrawing authority to self-insure.

b. Commercial General Liability: Commercial General Liability with Blanket Contractual Liability, Products and Completed Operations, Broad Form Property Damage, Premises and Operations, Independent Contractors, and Personal Injury coverages included. Such insurance shall provide coverage for total limits actually arranged by Contractor, but not less than $10 million Combined Single Limit and be specific for this Contract. Should the policy have an aggregate limit, such aggregate limits should not be less than $20 million. Umbrella or Excess Liability coverages may be used to supplement primary coverages to meet the required limits. Evidence of such coverages shall be on IPSC's Additional Insured Endorsement Form or on an endorsement of the policy acceptable to IPSC and provide for the following:

(1) To include IPA, IPSC, LADWP, and their officers, agents, and employees as additional insured with the Named Insured for the activities and operations under and in connection with this Contract.

(2) That the insurance is primary and not contributing with any other insurance maintained by IPA, IPSC, or LADWP.

(3) A Severability-of-Interest or Cross-Liability Clause such as: "The policy to which this endorsement is attached shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the company's liability."

(4) That the policy shall not be subject to cancellation, change in coverage, reduction of limits or nonrenewal of a continuous policy, except after written notice to IPSC, by receipted delivery, no less than thirty (30) calendar days prior to the effective date thereof.

(5) A description of the coverages included under the policy.

c. Commercial Automobile Liability: Commercial Automobile Liability covering the use of owned, nonowned, hired, and leased vehicles for total limits actually arranged by Contractor, but not less than $1 million Combined Single Limit. Such insurance shall include Contractual Liability coverage. The method of providing evidence of insurance and requirements for additional insureds, primary insurance, notice of cancellation, and Severability-of-Interest shall be the same as required in the Commercial General Liability Section of terms and conditions.

d. Professional Liability: Contractor shall provide Professional Liability Insurance with Contractual Liability coverage included, covering Contractor's liability arising from errors and omissions made directly or indirectly during the execution and performance of this Contract and shall provide coverage of $10 million Combined Single Limit. Evidence of such insurance shall be in the form of a special endorsement of insurance and shall include a Waiver of Subrogation against IPA, IPSC, and LADWP, their officers, agents, and employees.

e. Other Conditions:

(1) Failure to maintain and provide acceptable evidence of any of the required insurance for the required period of coverage shall constitute a major breach of Contract, upon which IPSC may immediately terminate or suspend this Contract. In addition or in the alternative, IPSC has the right (but not duty), to procure such insurance and (a) to submit a claim for the cost thereof against any Performance Bond supplied by Contractor, (b) to deduct the cost thereof from any monies due Contractor under this Contract or otherwise, and/or (c) to charge and collect the cost thereof from Contractor, payable upon demand. Such claim, deduction, or charge shall include an administrative fee of 2 percent of the cost of procuring said insurance. Said insurance may be procured and maintained in the name of Contractor, IPA, IPSC, LADWP, and/or any combination thereof, as primary and/or secondary insured, all as IPSC may from time to time elect.

(2) Contractor shall be responsible for all subcontractors' compliance with these insurance requirements. The foregoing remedies in subsection (1) shall be available to IPSC against Contractor for any failure by any subcontractor to maintain and provide the required insurance.

5. Transportation: All shipments of hazardous materials under this Contract or in connection herewith shall be handled in accordance with current U.S. Department of Transportation regulations and all other applicable federal, state, and local laws and regulations.

6. Safety: Contractor agrees, warrants, and represents that (a) it is familiar with the risks of injury associated with the Work and otherwise being on IPA premises, (b) has reviewed the Work to be performed, (c) has inspected the IPP job site with an IPSC representative, and (d) has determined that no unusual or peculiar risk of harm exists with regard to the Work to be performed at the IPP plant site. Contractor further agrees that it shall, at all times, provide at the IPP plant site a competent supervisor(s) familiar with IPSC's and the industry's safety standards to ensure compliance with all federal, state, and local regulations pertaining to safety (including, but not limited to, Federal and State OSHA, as said regulations relate to the Work to be performed under this Contract). Although IPSC assumes no responsibility to oversee or supervise the Work, IPSC reserves the right to review safety programs and practices and to make recommendations to Contractor. No such review or recommendation by IPSC shall impose any liability or responsibility on IPSC, or relieve Contractor from providing a safe working environment and complying with all legal requirements.

   Contractor shall comply with IPSC's safety and equipment requirements prior to starting Work. Worker protective clothing, which includes, but is not limited to, hardhats, safety glasses, safety shoes, gloves, respirators, earplugs, safety harnesses, and face shields shall be provided by Contractor.

   Prior to starting Work, all of Contractor's personnel shall attend a safety orientation taught by a representative of IPSC. At Contractor's option and subject to IPSC approval, a supervisor of Contractor may attend the orientation taught by IPSC, and then present the orientation to the remainder of Contractor's personnel. In that case, a roll shall be provided to IPSC which lists each person who received the orientation and the date it was received.

7. Material Safety Data Sheets: Contractor shall furnish IPSC with a Material Safety Data Sheet (MSDS) for all hazardous materials furnished under this Contract, used, stored, or transported on or near IPA premises in connection with this Contract. The MSDS shall be furnished to IPSC on, or prior to, the date of the first delivery, use, storage, or transportation of the materials or equipment.

   If these Specifications require that Contractor furnish instruction books, the MSDS shall also be included in such books.

8. Liquidated Damages: IPSC shall be compensated, and Contractor shall be charged for the following. Failure in timely delivery or installation in compliance with these Specifications ("substandard performance".) These provisions are intended to compensate IPSC for intangible losses that are too difficult or impossible to measure,

but which will nevertheless be incurred by IPSC in the event of the following kinds of substandard performance. IPSC and Contractor estimate that the following charges represent only a portion of those intangible losses IPSC will incur under the following circumstances. These provisions are not intended to be penalties, and shall not be construed to be in the nature of penalties. These provisions shall act as liquidated damages only for those intangible losses that result from the following delays, and shall not limit Contractor's liability for damages in the nature of actual expenditures or lost profits incurred by IPSC as a result of such delays. These provisions shall not limit Contractor's liability in the event of substandard performance that is not specifically described in, or is in addition to, the following provisions:

a. If Contractor is not prepared to proceed with the approved installation plan at the start of each respective outage, Contractor shall pay for all costs associated with mobilization and demobilization incurred by Contractor plus a boiler performance charge of $100,000.

b. For each day at the start of each respective outage that Contractor is unprepared to execute the approved installation plan, Contractor shall be assessed a charge of $100,000 up to a maximum of ten (10) days or $1,000,000.

c. For each day or portion thereof, that Contractor exceeds the 'Boiler Released to Operations' date specified in the Contract installation plan, Contractor shall be charged $100,000. The maximum penalty for extending a single unit outage shall be ten (10) days or $1,000,000.

d. Contractor shall be allowed to avoid one (1) day of charge associated with exceeding the 'Boiler Released to Operations' date, should such occur, if all materials and equipment are received and staged at IPP plant site in accordance with the approved installation plan, at least one (1) week prior to the outage start date. All boiler tubing must be received at the IPP plant site at least two (2) weeks prior to the outage start date in order to take advantage of this incentive.

e. For each tube or weld failure (tube leak) incident occurring at a Contractor installed tube or weld within two (2) years of installation, Contractor shall pay to IPSC the sum of $10,000.

9. Contract Termination:

(a) For Convenience or Security: IPSC reserves the right, by giving twenty (20) calendar days prior written notice (or such longer notice as IPSC may select) to Contractor, to terminate the whole or any part of this Contract at IPSC's convenience, whether or not Contractor is in default. IPSC also reserves the right to terminate this Contract, effective immediately upon notice, for purposes of security or safety of IPP or IPA facilities, persons who work at IPP or IPA

facilities, or the public. In the event of termination for convenience, security, or safety, IPA will pay Contractor reasonable and proper termination costs (if, however, Contractor's Proposal includes cancellation charges, payment for termination costs shall not exceed the cancellation charges set forth therein). Contractor shall, after consultation with IPSC, take all reasonable steps to minimize the costs related to termination. Contractor shall provide IPSC with an accounting of costs claimed, including adequate supporting information and documentation and IPSC may, at its expense, audit the claimed costs and supporting information and documentation.

(b) For Breach: IPSC may terminate the whole or any part of this Contract, effective immediately upon notice, in the event Contractor is in material default, and without right on the part of Contractor to claim any termination costs. This right to terminate is in addition to, and not in lieu of, any other remedy provided in this Contract or otherwise provided by law or equity.

(c) Limitation of Liability: In no event shall termination of this Contract, or any portion thereof, whether for convenience, security, safety, breach, or otherwise, constitute the basis for or result in any claim for consequential damages (including loss of anticipated profits or other economic damages) or punitive damages, and Contractor hereby releases IPA, IPSC, and LADWP, and their officers, directors, employees, agents, and representatives, from any and all such claims or liability.

10. Suspension of Work: IPSC reserves the right to suspend and reinstate execution of the whole or any part of this Contract and Work without invalidating the provisions of this Contract. In the event Work is suspended, Contractor will be reimbursed for actual direct unavoidable costs that it reasonably incurs as a result of the suspension. Claims for such cost reimbursement shall be submitted by invoice. Contractor shall use all reasonable means to minimize such costs, and shall allow IPSC to audit costs claimed. Contractor shall, upon request by IPSC, provide a projection of costs it anticipates to incur during any suspension, or continuation of suspension, contemplated by IPSC. In no event shall suspension constitute the basis for, or result in, any claim for consequential damages (including loss of anticipated profits or other economic damages) or punitive damages, and Contractor hereby releases IPA, IPSC, and LADWP, and their officers, directors, employees, agents, and representatives, from any and all such claims or liability.

11. No Waiver: No breach, noncompliance or other failure to perform (collectively "breach") by Contractor, or any subcontractor, or of any Work shall be deemed waived unless expressly waived in writing by the President and Chief Operations Officer. No waiver of any one breach by IPSC shall be deemed to waive any other prior, concurrent, or subsequent breach. No exercise, or failure to exercise, or delay in exercising any particular remedy by IPSC shall be deemed a waiver or preclude IPSC from subsequently invoking that remedy for that breach or any other breach. All remedies

granted to IPSC in this Contract, or by law or equity, are cumulative and may be exercised in any combination or order.

12. Typical IPP Job Site Weather Conditions: The average daily temperature at IPP plant site is 90°F in summer and 45°F in winter. During winter it is common for the temperature to stay below 10°F for up to two (2) weeks. Winter snow is a common occurrence and can stay on the ground for extended periods. The boilers are located indoors; however, are open to ambient conditions during outages. Contractor shall come prepared for temperature extremes.

PART F - DETAILED SPECIFICATIONS

DIVISION F2 - DETAILED REQUIREMENTS

1. General: The scope of this Contract includes the design, procurement, fabrication, delivery, installation, and start-up of modifications to the Intermountain Generating Station (IGS) Unit 1 and Unit 2 Steam Generators.

   a. These Contract modifications shall provide for a continuous boiler rating of 6,900,000 lbs/hr output at 1005°F superheat and 1005°F reheat temperature under normal operating conditions. These modifications shall also include an OFA system capable of providing a reduction in NOx emissions of 15 percent and consistent NOx emissions of less than 0.40 lbs/MMBTU under all operating modes. (See Performance Guarantees, Division F2, Article 11).

   b. Within the design phase of the Work, Contractor shall review all operational impacts on associated equipment and systems such as fans, burners, and dampers. Any concerns regarding operating limitations or increase power demands noted within the modeling/design phase shall immediately be brought to the attention of the Contract Administrator.

   c. A primary focus of this Contract shall be the optimization of the Work to occur during Unit off-line hours. Detailed planning of the Contract Work Scope shall include a level of redundancy in materials, equipment, and manpower to ensure that guaranteed schedules are achieved.

2. Project Scope: The successful bidder shall provide and complete the following Work:

   a. Boiler Model: Contractor shall prepare and utilize a representative boiler model to determine the proper design, arrangements, operating guidance, and operational impact associated with the boiler modifications within this Contract. A complete set of model inputs and results of the various model runs shall be provided to IPSC as part of IPSC's design review of this Project. Among the operational impacts evaluated shall be:

      (1) Superheat Temperature and Pressure

      (2) Reheat Temperature

      (3) Furnace Exit Gas Temperature

      (4) Economizer Exit Gas Temperature

      (5) Generation of Oxides of Nitrogen

      (6) Furnace Heat Absorption and Cleanliness

      (7) Superheat and Reheat Attemperator Sprays

(8) Carbon Monoxide Generation

(9) Burner Metal Temperatures both In-Service and Out-of-Service

b. Platen Superheat Extension: Contractor shall design, fabricate, and install additional platen superheat surface on both Unit 1 and Unit 2, to maximize both reheat and superheat temperature support while maintaining boiler efficiency. The base design case shall consist of an 8 foot extension of the platen superheater element loops.

Unless otherwise specified or recommended by the bidder, the extensions shall be installed at a single cut line located 18 inches above the upper, inner loop tube of each platen element. This will result in an approximate vertical section length on the outer loop tube of each element of 13.5 feet or an actual element extension of 8 feet. The design shall include appropriate modifications to the steam cooled alignment tubes, additional alignment castings, and all other provisions for ensuring reliable long-term operation of the platen superheaters.

The platen extension design shall include a complete assessment of the adequacy of the existing structural support systems, metallurgy, seismic, environmental impacts, boiler efficiency, and other operational impacts of the associated boiler modifications.

Contractor shall perform a specific assessment of the adequacy of the present sootblowing system and provide recommendations for sootblowing system enhancements where advisable. Assessment of, and provisions for, quantifying and minimizing tube wastage and fouling concerns shall be included within the detailed design.

c. Overfire Air System: Contractor shall design, fabricate, and install an OFA system on Unit 1 and Unit 2 capable of reducing overall NOx by 15 percent on each unit allowing for normal operation at or below 0.40 lbs/MMBTU NOx. (See Performance Guarantees, Division F2, Article 11).

Within the design phase of the Work, Contractor shall review all operational impacts on associated equipment and systems such as fans, burners, and dampers. Anticipated operating modes, recommended operating methods, and allowable equipment limits shall be clearly defined for the affected systems.

Contractor shall provide a complete set of drawings for the OFA system modifications including details of the type, quantity, and manner of interface for each existing system or piece of equipment affected by the Contract modifications. Drawings shall include item-by-item detail of instrumentation, piping, power, and any other inter-ties with, or connections to, plant systems.

This Work includes all access, disassembly, insulation removal, scaffolding, waterwall window construction, OFA port installation, duct installation, air balancing hardware installation, and insulation/lagging replacement. The OFA system shall be designed and constructed with standard sized components and assemblies. This is to allow for retrofit of additional OFA system components or assemblies into Unit 1 and Unit 2 boilers at a later date in the case where a bidder proposes something less than a full OFA system at the present time.

d. Alignment of Intermediate Superheat: Contractor shall install, IPSC provided, split-ring alignment castings, as replacements in the locations of the original castings on the intermediate superheat pendants. This Work consists of aligning the existing tube elements and installing the castings at three (3) elevations on each vertical section of the intermediate superheat pendants. This is a total of approximately two-hundred fifty (250) castings.

e. Insulation and Lagging: Contractor shall provide and install replacement insulation anchors, insulation, lagging, and all other materials required for complete restoration of any and all boiler external surface removed or disturbed during or resulting from Contract Work. Contractor shall replace or install insulating materials of a quality meeting or exceeding the insulation system currently in use on the respective boiler and system components.

f. Access Provisions: Contractor shall design, furnish, and install a multilevel access scaffolding system for installation in the boiler furnace in four (4) days or less. Removal of the scaffold from the boiler shall occur in three (3) days or less.

The scaffold system shall be designed to allow access for Work on all burner levels, OFA port installation, general inspection, and repair of possible eroded areas around all wall blowers and full platform access at the arch nose elevation. This includes a 4 foot full-perimeter walkway, access at eight (8) separate levels, and a full platform at the arch nose elevation.

Above the nose platform, scaffold shall be provided for full access to platen tube cut/weld line on both sides of each element. Scaffold shall be designed for convenient standing access to all platen extension welds.

Scaffold hardware shall also be provided for access to all approximate two-hundred fifty (250) split-ring castings on the intermediate superheat pendants.

IPSC may elect to provide the boiler internal scaffold from other sources. In this case, IPSC will consult directly with Contractor regarding access requirements and schedule coordination. All responsibilities for access hardware shall be clearly set forth in the approved installation plan.

Contractor shall provide any replacement membrane wall material/sections associated with additional access requirements or other material arising out of Contractor's installation plan. Access ways installed through the boiler wall membrane shall be done in such a way as to maximize productivity and minimize total outage time required. Extent of membrane wall prefabrication shall be detailed in the installation plan.

All scaffold and access hardware shall be OSHA approved structures. The furnace scaffold structure shall be thoroughly reviewed and stamped by an experienced, professional, structural engineer licensed in the state of Utah.

IPSC shall be allowed access to scaffold and other access provisions in any areas required. This work will be coordinated through the Contract Administrator or designee in a manner aimed at minimizing Contractor's schedule impacts. IPSC's scheduled work within the areas of the Contract Work shall be outlined within the approved installation plan.

g. Technical Support: Contractor shall consult with IPSC throughout the design development process allowing IPSC to participate in the selection process of preferential items or common industrial equipment required within the design. Bidders shall include the names and direct dial telephone numbers of the lead project design engineers in each area of expertise, in the bid package. Where possible, the name and telephone number of the assigned site construction coordinator shall also be provided. All technical advisory personnel assigned to support IPSC within this Project shall have a minimum of ten (10) years experience in the issues to be addressed.

During construction and startup, Contractor shall provide full-service technical support in all areas of expertise required for successful startup and tuning of the boiler. This shall include technical support in proper positioning, tuning, operation, and control of the convection pass bias dampers.

Bidders shall include a minimum of two (2) weeks of support following startup to ensure stable operation. In addition, bidders shall include at least one (1) additional week (including travel and board) at IPP job site for two (2) people to witness and participate in the full-load operational testing. Should extended problems arise as a direct result of the Contract modifications, Contractor shall provide whatever level of support is required to address the problems, in a timely manner.

h. Clean-up and Demobilization: Contractor shall be responsible to maintain its work areas in an organized and safe manner throughout the execution of the installation plan. IPSC shall retain the right to assess and require correction of any areas or situations it deems as impacting ongoing operations and

maintenance. Waste material produced during a shift shall be disposed of by the end of the following shift.

At the conclusion of each outage, Contractor shall ensure that all work areas associated with this Contract are restored, replaced, and/or cleaned in a manner similar in appearance to that found prior to the outage.

3. Schedules: The Unit 1 outage is currently scheduled to begin March 1, 2003 and end March 28, 2003. The Unit 2 outage is currently scheduled to begin February 28, 2004 and end March 26, 2004.

   a. All bidders shall provide a guaranteed installation schedule as part of the proposed installation plan submitted with each bid package.

   b. The proposed installation plan shall be developed to ensure completion of all Work inside the boiler within a maximum of twenty-six (26) days. This twenty-six (26) day period shall include four (4) days for installation of the boiler internal scaffolding and three (3) days for removal of the same.

   c. Work not requiring the unit to be off-line, such as mobilization, staging, boiler enclosure structural access work, demobilization, etc., shall be clearly identified on the proposed installation plan and can be coordinated outside this outage window, with approval from the Contract Administrator.

   d. The bidders shall provide a schedule of costs associated with an IPSC scheduled delay of the outage start date in one (1) week increments up to one (1) month. These costs shall be based on notification from IPSC one (1) month prior to the scheduled outage start dates and a second schedule based on notification from IPSC one (1) week prior to the scheduled outage start dates.

   e. Unless otherwise noted in these Specifications, IPSC facilities and equipment shall not be used in support of this Work. To prevent delays, caused by equipment breakdown, Contractor shall provide spare tools and equipment at IPP job site in reasonable quantities in anticipation of equipment failures.

4. Installation Plan: Each bidder shall prepare and provide, with each bid package, a proposed installation plan showing Project progress on a daily basis beginning with initial equipment delivery and ending with job site clean up and exit.

   a. The proposed installation plan, submitted with the bid package, shall be the basis for development of the approved installation plan forming a part of the eventual Contract governing this Work. The approved installation plan shall be used as the basis for instituting mid-outage resource corrections and for calculating any liquidated damages charges associated with completion of the Work Scope.

b. The proposed installation plan shall include detailed information regarding each task within the Contract scope, including:

(1) Equipment and Material Delivery

(2) Equipment Mobilization and Assembly

(3) Manpower Loading Throughout Contract

(4) Scaffold Installation Plan

(5) Scaffold Erected, Guaranteed Date

(6) Scaffold Removed, Guaranteed Date

(7) Boiler Pendant Split-Ring Casting Replacement

(8) Platen Loop Removal and Extension

(9) Overfire Air Port Window Removal and Port Installation

(10) NDE Requirements

(11) Combustion Air Ducting Modifications

(12) Any Windbox or Burner Work Required by OFA Design

(13) Boiler Insulation Specifications

(14) Boiler Released to Operations, Guaranteed Date

(15) Equipment Disassembly

(16) Material Equipment Removal and Area Clean-up

c. The proposed installation plan, to be included as part of the submitted bid, shall include estimates of all required on-site services, with clear identification of each request for service to be provided by IPSC. These estimates shall include power service requirements for running all electrical equipment and compressed air requirements. Authorization for connection to and use of requested power, compressed air, or other on-site services must be coordinated and approved by the IPSC Contract Administrator.

d. At least two (2) months prior to mobilization to IPP plant site, the successful bidder shall provide a detailed material "laydown plan" for coordination of area

utilization and access. The laydown plan shall address staging and temporary storage requirements for all associated materials and equipment in order to minimize interference with ongoing plant operations and outage work. This laydown plan shall be submitted to and approved by the Contract Administrator prior to receiving any Contract materials, equipment, or craft personnel on site for the outage work.

e. Contractor shall provide and utilize two (2) certified welders over and above the minimum number required to meet the guaranteed schedule specified within the proposed installation plan. Any welder found to produce more than one (1) substandard weld within a seven (7) day period shall be permanently removed from code welding work for the duration of the Project. Determination of substandard weld quality shall be the responsibility of the Contract Administrator or designee.

5. Applicable Codes and Standards: The Work performed within these Specifications shall adhere to the applicable portions of the latest published revision of the following codes and standards:

a. ASME - American Society of Mechanical Engineers

b. NBIC - National Board Inspection Code

c. AWS - American Welding Society

d. OSHA - Occupational Safety and Health Administration

e. ASNT - American Society for Nondestructive Testing

f. Contractor's Utah Jurisdiction Approved R Stamp Program

6. Safety: Contractor shall be responsible to provide and manage an acceptable safety program. (For additional information see Division F1, Article 6).

a. Contractor shall provide a full-time safety representative. The safety representative shall act as the point of contact for all safety-related issues and may be assigned additional duties.

b. Contractor shall provide copies of written safety policies/plans to the Contract Administrator one (1) month prior to beginning Work. These include, but are not limited to, Respiratory Protection, Confined Spaces, and Hazardous Communications.

c. Prior to flame cutting or welding in any location, Contractor shall first obtain a Hot Work Permit. This permit will be coordinated by the Contract Administrator or

designee. The permit lists mandatory safety precautions which shall be taken before, during, and after hot work.

d. Contractor shall ensure its employees perform Work in accordance with all applicable federal, state, and local safety and health regulations. The IPSC Safety Section personnel will periodically monitor the Work site. If violations are noted, they will be reported to Contractor's on-site supervisor and the Contract Administrator for appropriate action.

e. The following is a list of anticipated safety hazards and personal protective equipment needed in the Contract Work area. This must not be considered a complete listing of all potential hazards. Contractor shall provide appropriate personal protective equipment to its employees to protect against these hazards and others as they are identified :

Hazard	Safety Equipment Required
Hazardous noise	Earplugs and/or earmuffs
Toxic fumes and/or vapors from welding, grinding, or solvent type cleaning	Preparing for proper working atmosphere in and around the boiler requires specific preparation by Contractor
Head injuries from falling material or bumps	Hardhats
Burns from welding and cutting	Gloves, long sleeve shirts, and welding leathers
Foot injuries from dropped tools or equipment	Steel-toed boots
Eye and face injuries	Safety glasses and face shields

8. Quality Assurance/Quality Control:

a. IPSC reserves full access rights for quality assurance (QA) inspections of ongoing Work. A nonbinding schedule identifying the anticipated approximate number of random QA inspections in each area shall be prepared by IPSC and included within the approved installation plan.

b. Contractor shall provide, within the proposed installation plan, a quality control plan, identifying the procedures and acceptance criteria to govern the Work. The Work specific quality control plan shall detail the number and type of

examinations to be performed during installation to ensure the long-term integrity of all pressure boundaries and structural connections.

c. The successful bidder shall provide all required nondestructive examination (NDE) personnel in support of Contractor's R Stamp Program and as detailed in the approved installation plan. These personnel shall be trained and certified in accordance with ASNT standards, with at least five (5) years in the applicable technique.

d. Contractor shall provide to IPSC a copy of all code documentation required, including, but not limited to:

(1) NDE Certifications

(2) R Forms

(3) Repair Plans

(4) Welder Certifications

(5) Procedure Qualifications

(6) NDE Reports

(7) Material Test Reports

e. Contractor shall submit certified weld procedures and welder qualification records for each welder employed, to the Contract Administrator prior to beginning Work.

f. A substandard weld shall be defined as any weld declared substandard in the opinion of the Contract Administrator or designee. The ASME and AWS codes will form the basis of the acceptability determination.

g. Completed welds shall be smooth and free of undercutting, cavities, depressions, cracks, surface porosity, weld craters, overlaps, and abrupt ridges. All welds shall meet the specifications of the applicable sections of AWS and ASME Section I.

9. Available On-Site Services: Unless otherwise arranged in writing with the Contract Administrator, on-site services shall be provided in accordance with this Section. Services not covered in this Section shall be provided by Contractor.

a. IPSC will make potable water, compressed air (small volume only), and electricity available at 460 volt and 120 volt. Connections to IPSC electric or

water systems shall be made only by IPSC employees unless approved otherwise in writing for each specific location. Contractor shall identify all service connection requirements within the proposed installation plan.

b. Contractor shall provide enough sanitary facilities for its employees. Contractor employees are prohibited from using the permanent restroom facilities at IPP plant site.

c. Equipment and material staging requirements shall be clearly detailed within the successful bidder's site laydown plan submitted to the Contract Administrator at least two (2) months prior to the outage start date. Actual placement of materials and equipment shall be coordinated with the Contract Administrator.

d. Contractor shall maintain a clean work space. Contractor shall clean the work site daily. This includes, but is not limited to, picking up trash, sweeping, washing the area as necessary, straightening cords and hoses, organizing tools and equipment, and emptying trash receptacles. IPSC will provide trash collection containers (dumpsters) for Contractor's use outside the generation building at ground level. IPSC will empty these containers as needed.

e. IPSC will provide general fire protection and first aid services. Provisions for local fire extinguishing, such as weld slag induced fires, shall be provided by Contractor. All workplace injuries shall be reported to IPSC's First Aid Clinic and the Contract Administrator.

g. IPSC will not provide office or administrative space or off-site telephone service to Contractor; however, IPSC will make an on-site telephone line available to Contractor at a specific, office-trailer-ready location, if requested. Contractor shall make its own arrangements for off-site and long distance telephone service.

10. Shipping, Receiving, Handling, and Storing:

a. Shipping: The Contractor shall ensure that all materials and equipment are securely prepared for shipment to prevent damage and or deterioration. All pressure parts shall be coated with a light color rust inhibiting coating prior to shipment to allow for ready identification and correction of damaged material.

Tube ends shall be fully prepared for installation prior to shipment and shall be capped or otherwise protected from damage during shipment. Tubing shall be shipped and stored with means for preventing oxidation/corrosion of internal and external surfaces.

b. Receiving: Upon arrival at IPP plant site, Contractor shall examine all shipments for shortages, discrepancies, or damage. Contractor shall prepare a report

itemizing the material received and submit the report to the Contract Administrator.

c. Handling: Contractor shall be responsible for any damage to equipment and materials until final acceptance of the Work. Contractor shall be responsible for arranging the unloading of all carriers promptly and shall pay any demurrage incurred. Materials shall be handled with due care to prevent damage or loss.

d. Storage: All materials, equipment, and supplies not immediately incorporated in the Work shall be placed in storage. Storage areas will be allocated and assigned by the Contract Administrator; however, will be in general area of the Work. The storage areas shall be kept clean and orderly at all times.

Contractor shall temporarily connect the motor space heaters for the fan motors to a 120 volt source while in storage and construction until a permanent source is available.

11. Performance Guarantees: Significant weight will be applied to the form and type of the performance guarantees offered within each bid. Of particular interest to IPSC are the performance parameters associated with operation at 950 Megawatts gross generation (6.75 MM lbs/hr steam flow). These include:

a. Total NOx output of 0.40 lbs/MMBTU or less and an overall reduction of 15 percent. Current maximum average of 0.45 lbs/MMBTU.

b. Superheat and reheat temperatures as well as NOx emissions must remain within the Contract stated acceptable ranges throughout the test.

c. Impact on average unburned carbon (LOIs) and carbon monoxide (CO) concentrations within the boiler.

d. The above operational guarantees shall be verified in a steady state operational test within thirty (30) days of installation. Steady state operation shall be defined as stable and reliable operation at and within the following operating conditions and ranges for a period of at least seven (7) days:

(1) Seven (7) pulverizers in-service (E and G pulverizers alternately out-of-service).

(2) Excess air to be controlled between 2.5 to 3.2 percent.

(3) Superheat and convection surfaces maintained at 80 to 85 percent cleanliness.

(4) Boiler tube maximum allowable metal temperatures must not be exceeded.

(5) Turbine throttle pressure of 2375 psi.

(6) Furnace cleanliness maintained at 85 to 90 percent actual cleanliness.

(7) Superheat attemperator spray flow at or above 50,000 lbs/hr.

(8) Reheat attemperator spray flow at 0 lbs/hr.

e. Should Contractor fail to achieve the above stated operating conditions, Contractor shall, as station operating schedules allow, and at its own expense, provide all required expertise, material, equipment, and labor to achieve the above specified operating parameters.

Unit 2			Start Time ############ End Time ############ Test 1			############ ############ Afternoon day 1			5/17/2002 7:30 ############ Day 2		
			average	maximum	minimum	average	maximum	minimum	average	maximum	minimum
Load	2COAXI027A		952.89	961.24	943.75	952.67	962.74	940.49	950.49	962.25	938.26
	2TGBPK0022		952.29	960.82	943.24	952.09	962.23	939.02	949.95	961.54	937.61
Aux Power	2APEKV0005		52.28	53.70	50.40	52.86	54.60	50.40	51.86	53.70	50.10
TEMPERATURES Air/Gas											
Fan Room Outside Temp	2SGBTE1160	Deg F	75.45	77.64	73.66	75.05	82.18	65.38	66.43	75.10	56.60
Fan Room Temp	2SGBTE1065	Deg F	76.02	77.29	74.47	76.05	78.41	70.25	67.96	74.73	61.47
Air Temp Ent SAH 1A	2COAXI124A	Deg F	85.33	87.51	83.03	84.12	87.51	75.42	77.40	85.28	67.65
Air Temp Ent SAH 1B	2COAXI125A	Deg F	84.38	86.45	81.70	83.83	86.73	75.67	76.03	84.72	66.12
Air Temp Ent PAH 2A	2SGBTE0911	Deg F	124.77	126.06	123.12	123.97	126.63	116.56	118.82	125.81	110.32
Air Temp Ent PAH 2B	2SGBTE0912	Deg F	125.79	127.57	124.11	124.85	127.57	117.28	118.96	127.24	109.11
Air Temp Lvg SAH 1A	2COAXI149A	Deg F	664.62	667.86	660.61	669.87	677.31	660.61	654.18	659.35	648.81
Air Temp Lvg SAH 1B	2COAXI150A	Deg F	663.07	664.65	661.27	667.81	674.70	661.27	657.55	662.17	651.63
Air Temp Lvg PAH 2A	2SGBTE0917	Deg F	533.74	535.03	530.79	537.87	543.19	530.79	537.96	541.94	532.20
Air Temp Lvg PAH 2B	2SGBTE0918	Deg F	543.35	545.23	540.68	547.17	553.60	540.52	546.19	551.51	541.31
Flame Gas Temp	2SGAPX3571	Deg F	3676.76	3730.70	3598.13	3703.51	3759.64	3598.13	3793.42	3862.67	3723.01
SSH Platens Gas Out Temp	2SGAPX3582	Deg F	2216.62	2243.60	2160.22	2233.49	2273.87	2160.22	2245.47	2275.70	2196.48
SSH Int Gas In Temp	2SGAPX3591	Deg F	2216.62	2243.60	2160.22	2233.49	2273.87	2160.22	2245.47	2275.70	2196.48
SSH Int Gas Out Temp	2SGAPX3592	Deg F	1884.88	1921.45	1821.10	1903.00	1944.88	1821.10	1895.84	1923.40	1863.95
SSH Outlet Bank Gas Out Temp	2SGAPX3602	Deg F	1718.15	1753.47	1653.74	1738.70	1777.64	1653.74	1726.00	1751.76	1690.12
RH Outlet Bank Gas Out Temp	2SGAPX3612	Deg F	1480.78	1513.72	1435.47	1499.60	1532.52	1435.47	1494.89	1519.70	1460.49
Pri RH Banks Gas In Temp	2SGAPX3641	Deg F	1508.05	1537.16	1466.48	1526.67	1558.15	1466.48	1522.41	1546.19	1491.13
RH Section Gas Out Temp	2SGATE1631	Deg F	754.18	761.05	742.81	759.38	770.78	742.81	741.75	754.57	729.44
PSH Outlet Gas Temp	2SGAPX3622	Deg F	934.72	944.93	925.57	945.70	959.38	925.57	939.52	950.35	925.93
Econ Section Gas Out Temp	2SGATE1625	Deg F	735.98	741.19	727.41	742.49	753.35	727.41	730.83	737.54	717.68
Gas Temp Ent SAH 1A	2SGATE1650	Deg F	746.55	749.70	741.60	752.24	763.08	741.60	741.18	748.49	729.03
Gas Temp Ent SAH 1B	2SGATE1651	Deg F	751.52	755.38	745.24	757.89	769.16	745.24	742.01	750.51	729.84
Ave Econ Exit Gas Temp	2SGAPX3015	Deg F	749.02	752.67	743.44	754.96	765.72	743.44	741.58	748.86	730.26
Gas Temp LVG SAH 1A	2COAXI122A	Deg F	312.45	313.88	310.35	313.27	317.10	310.35	304.02	309.50	296.83
Gas Temp Lvg SAH 1B	2COAXI123A	Deg F	310.30	312.25	308.09	311.68	313.88	308.09	301.49	306.85	295.51
TEMPERATURES Stm/Wtr											
BBFP Suction Temp	2FWATE0045		347.39	347.39	347.39	347.77	348.33	347.39	348.18	348.44	347.86
BFP Suction Temp	2FWATE0046		345.55	346.13	344.56	345.63	346.45	344.56	345.65	346.45	344.56
	2FWATE0047		346.53	347.08	345.66	346.60	347.23	345.51	346.68	347.39	345.82
	2FWATE0048		345.51	345.51	345.51	345.65	346.13	345.44	345.94	346.31	345.74
BFP Discharge Temp	2FWATE0049		353.14	353.83	352.10	353.21	354.14	352.10	353.35	354.30	352.26
	2FWATE0050		353.99	354.77	352.88	354.05	354.92	352.73	354.23	355.08	353.04
	2FWATE0051		339.25	340.78	337.97	340.51	341.27	337.97	341.14	341.48	340.95
SH Desuperheater Spray Temp	2COAXI026A		367.73	368.86	366.44	367.26	369.34	365.25	361.40	362.82	361.20
	2SGATE0991		347.81	348.82	347.20	347.41	349.32	345.58	342.50	344.03	342.34
HP FW Htr Inlet Temp	2FWATE0052		351.77	352.41	350.84	351.84	352.57	350.84	352.05	353.04	351.00
Econ Inlet Water Temp	2COAXI025A		549.00	549.90	547.94	549.08	549.90	547.94	548.74	549.90	547.50
	2FWATE0990		548.44	549.16	547.59	548.49	549.16	547.59	548.14	549.16	546.96
TSAT at Drum Pressure	2SGAPX3261		677.67	680.10	676.95	677.38	680.10	676.61	678.35	679.00	677.80
1st Stage SH Attemp Inlet Temp	2SGATE0863		720.07	723.76	715.25	720.49	724.57	715.25	715.07	718.49	711.60
	2SGATE0864		722.65	727.01	716.06	723.66	727.82	716.06	717.35	720.12	715.25
1st Stage SH Attemp Outlet Temp	2COAXI098A		719.28	723.25	714.37	719.89	723.76	714.37	713.91	717.26	710.75
	2COAXI099A		723.58	728.50	716.37	724.44	729.37	716.37	716.64	720.87	714.00
2nd Stage SH Attemp Inlet Temp	2SGATE0871		776.94	783.75	768.34	778.80	784.96	768.34	768.00	775.23	763.08
	2SGATE0872		786.24	796.77	773.61	789.56	796.77	773.61	777.53	786.63	771.99
2nd Stage SH Attemp Outlet Temp	2COAXI093A		773.82	781.34	765.00	775.60	783.62	765.00	765.15	773.12	759.37
	2COAXI094A		783.90	794.13	771.50	787.30	794.13	771.50	776.00	785.25	769.00
SSH Int Bank Outlet Temp	2SGATE0514		902.35	909.43	885.12	905.30	912.27	885.12	891.85	906.19	884.31
Main Steam Temp	2COAXI015A		999.01	1006.20	982.65	1000.08	1008.91	982.65	980.10	997.64	966.44
Cold Reheat Inlet Temp	2SGJTE0019		629.27	634.60	616.36	630.48	635.41	616.36	613.39	626.09	603.80

	2SGJTE0022		629.99	635.41	617.17	631.18	636.22	617.17	614.15	626.49	605.01
Pri RH Section Steam Out Temp	2SGATE1637		815.89	827.57	797.17	818.16	827.57	797.17	803.54	818.65	794.00
RH Turbine Inlet Temp East	2COAXI104A		1003.77	1017.90	983.86	1006.28	1017.90	983.86	975.42	989.55	960.00
RH Turbine Inlet Temp West	2COAXI105A		998.64	1012.66	979.35	1001.17	1012.66	979.35	970.87	984.61	955.49
Blr Hot Reheat Temp Ave	2COAXI046A		1004.44	1018.96	984.30	1006.93	1018.96	984.30	976.24	990.30	961.06
Steam Temp Pickup											
Drum thru PSH	2SGAPE0001		43.65	48.30	35.94	44.68	49.42	35.94	37.93	40.81	34.93
Platens	2SGAPE0002		60.05	65.58	55.60	61.99	67.00	55.60	57.59	62.08	54.18
SSH Int Bank	2SGAPE0003		138.05	147.70	131.08	138.05	147.70	131.08	132.66	142.99	125.61
SSH Out Bank	2SGAPE0004		82.09	87.62	76.83	80.59	87.62	75.15	76.85	82.75	67.81
Pri RH Section	2SGAPE0005		186.15	193.35	175.51	187.33	193.35	175.51	189.67	197.60	183.01
RH Outlet	2SGAPE0006		185.32	189.55	173.94	185.61	190.41	173.94	169.67	180.02	160.77
PRESSURES Stm/Wtr											
BFP Suction Pressure	2FWAPT0028		300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
BFP 1A Discharge Pressure	2FWAPT0029		2921.33	2973.72	2886.20	2914.82	2973.72	2876.31	2940.77	2968.72	2907.56
BFP 1B Discharge Pressure	2FWAPT0030		2921.34	2973.72	2888.76	2914.56	2973.72	2873.74	2942.22	2967.50	2911.22
HP Htr Inlet Pressure	2FWAPT0250		2881.77	2932.39	2850.35	2875.67	2932.39	2838.28	2900.41	2923.63	2871.07
Econ Inlet Pressure	2FWAPT0032		2744.92	2795.01	2717.49	2738.98	2795.01	2708.70	2761.26	2782.56	2733.73
Drum Pressure	2COAXI043A		2654.11	2703.73	2628.01	2649.25	2703.73	2621.23	2666.38	2684.96	2639.27
PSH Outlet Pressure	2SGAPT0195		2588.37	2639.09	2563.10	2583.49	2639.09	2556.60	2598.80	2617.48	2572.53
	2SGAPT0196		2588.78	2640.00	2564.10	2584.02	2640.00	2556.60	2599.65	2617.48	2573.44
SSH Platen Outlet Pressure	2SGAPT0198		2560.19	2613.73	2534.99	2555.52	2613.73	2529.40	2571.02	2589.37	2543.41
	2SGAPT0199		2557.52	2609.97	2531.24	2552.67	2609.97	2525.65	2568.24	2586.54	2540.67
Main Steam Pressure	2COAXI012A		2345.85	2403.57	2320.80	2340.83	2403.57	2315.38	2354.34	2371.78	2328.57
	2SGGPT0001		2351.03	2409.38	2326.88	2345.83	2409.38	2320.29	2359.54	2376.60	2333.48
Steam Chest Pressure	2TGAPT0040		2310.20	2365.98	2290.99	2304.58	2365.98	2280.01	2317.09	2334.03	2297.04
1st Stage Inlet Pressure	2COAXI042S		2272.34	2297.97	2252.41	2270.43	2297.97	2246.99	2289.17	2305.81	2265.01
HP section Exhaust Pressure	2SGJPT0012		596.32	602.24	590.50	596.23	603.00	588.25	598.93	605.51	590.74
	2COAXI171A		594.08	599.99	588.20	593.99	600.80	586.20	596.79	603.19	588.81
Cold Reheat Inlet Pressure	2SGJPT0009		590.60	596.26	586.13	590.48	596.50	583.25	593.42	599.26	586.70
	2SGJPT0011		591.53	596.50	587.00	591.37	598.26	584.25	594.14	600.99	587.87
Hot Reheat Outlet Pressure	2SGJPT0006		555.92	561.49	550.26	555.80	562.25	548.26	558.40	564.74	550.75
	2SGJPT0007		554.72	560.49	548.99	554.64	561.00	546.99	557.31	564.01	549.50
RH Steam Pressure	2SGJPT0045		542.35	547.01	538.99	542.02	547.99	534.99	544.61	550.00	538.01
Turb RH Bowl Press	2SGJPT0049		551.19	557.00	545.50	551.05	557.51	543.50	553.61	560.00	545.74
PMAX RH Pressure Drop	2SGAPX3356		6.72	6.73	6.72	6.73	6.74	6.72	6.74	6.75	6.73
Fox 1A RH Pressure Drop	2INAKV0021		6.75	7.08	6.39	6.74	7.08	6.39	6.71	7.04	6.37
AIR FLOWS											
Total Fuel Flow	2COAXI001A	TPH	368.52	378.41	360.09	368.97	378.41	360.09	355.73	365.10	350.10
Total Air Flow %	2COAXI078S	%	88.28	90.27	85.55	88.39	90.27	85.55	87.70	90.20	85.38
RH Bias Damper Pos %	2COAXI136A	%	89.73	99.59	64.82	74.98	99.59	53.45	99.86	100.00	99.48
SH Bias Damper Pos %	2COAXI135A	%	92.90	92.90	92.90	92.90	92.90	92.90	92.90	92.90	92.90
FD Fan 1A Blade Pitch	2COAXI153A	%	63.59	64.53	60.95	63.37	64.53	60.95	61.46	62.43	60.30
FD Fan 1B Blade Pitch	2COAXI154A	%	63.28	64.90	60.90	63.17	64.90	60.90	61.27	62.37	59.85
Sec Air Flow 1A	2COAXI076R	%	79.71	81.65	77.25	79.80	81.65	77.25	79.40	81.40	77.28
Sec Air Flow 1B	2COAXI077R	%	81.51	83.15	79.05	81.52	83.15	79.05	81.02	82.48	79.32
FD Fan 1A D/P	2SGBPT0218		12.08	12.63	11.47	12.10	12.63	11.47	11.62	12.07	11.12
FD Fan 1B D/P	2SGBPT0219		12.58	13.13	12.13	12.70	13.13	12.13	12.18	12.54	11.89
FD Fan 1A Amps	2SGBKK0005	Amps	237.29	240.06	229.32	237.30	240.06	229.32	231.27	236.00	228.02
FD Fan 1B Amps	2SGBKK0006	Amps	226.84	233.39	218.58	226.93	233.39	218.58	222.69	226.72	218.58
East Flue Gas O2	2COAXI079A	%	2.37	5.61	1.91	2.43	5.61	1.86	2.49	3.08	2.06
West Flue Gas O2	2COAXI080A	%	2.34	4.09	1.98	2.34	4.09	1.97	2.62	2.95	2.30
Selected Econ Out O2	2COAXI187A	%	2.35	4.00	2.06	2.38	4.00	2.05	2.56	2.85	2.26
Stack NOx Converted	2SAAKK0007		0.44	0.46	0.43	0.45	0.47	0.43	0.43	0.45	0.41
Blr Total Gas Flow	2SGAPX3520	Lb/hr	7925507	8192206	7712089	7839962	8192206	7711814	7577249	7727470	7410230
Blr Econ Gas Flow	2SGAPX3660	Lb/hr	5054294	5218116	4804193	5018764	5218116	4804193	4674165	4868740	4494644
Blr RH Gas Flow	2SGAPX3661	Lb/hr	2871627	2973968	2776696	2821282	2973968	2720054	2903302	3043794	2811854

CEM Stack Vol Flow (MMSCFH)	2SAAKK0016		152.22	156.34	146.57	152.16	156.34	146.57	148.21	156.90	93.05
PMAX Stack Vol Flow (MMSCFH)	2SGAPX3903		134.99	139.56	131.42	133.58	139.56	131.42	128.71	131.21	125.92
FLOWS Wtr/Stm											
Feedwater Flow (Fox 1A pt)	2FWAFT0025	KPPH	6724.80	6952.79	6485.58	6705.22	6952.79	6441.79	6842.60	6972.66	6611.84
Feedwater Flow (CCS pt)	2COAXI021A	KPPH	6737.78	6975.43	6499.47	6717.06	6975.43	6438.15	6861.23	6989.53	6630.85
Total Sprays (CCS)	2COAXI022A	KPPH	21.16	37.63	7.87	21.11	43.00	7.87	16.69	24.87	0.00
Total Sprays (PMAX)	2SGAPX3033	KPPH	20.70	35.86	9.95	20.19	35.98	9.95	21.32	31.74	11.60
Steam Flow (FFW + Sprays)	2COAXI023A	KPPH	6758.50	6992.95	6525.74	6737.80	6992.95	6478.53	6877.52	7000.00	6646.44
Steam Flow off 1st Stage	2COAXI024A	KPPH	6760.34	6833.80	6702.41	6754.44	6833.80	6686.82	6810.12	6856.44	6737.45
PMAX Throttle Flow	2FWAPX3352	KPPH	6760.16	6884.64	6666.10	6738.29	6884.64	6623.16	6881.50	6994.02	6782.74
RH Spray Flow	2COAXI108A	KPPH	8.39	10.00	6.30	7.77	10.00	6.30	9.78	11.85	7.75
BFP 1A Flow	2FWAFT0008	KPPH	3351.08	3396.95	3306.74	3343.55	3396.95	3284.65	3401.54	3442.12	3354.23
BFP 1B Flow	2FWAFT0009	KPPH	3319.09	3367.17	3258.40	3309.57	3367.17	3241.31	3365.31	3415.88	3322.98
BFP 1C Flow	2FWAFT0010	KPPH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBFP 2A Flow	2FWAFT0001	KPPH	2390.20	2471.27	2282.54	2381.33	2471.27	2261.30	2435.30	2486.28	2345.04
BBFP 2B Flow	2FWAFT0006	KPPH	2254.94	2338.69	2178.78	2248.94	2338.69	2162.54	2289.58	2358.71	2222.48
BBFP 2C Flow	2FWAFT0007	KPPH	2275.89	2368.72	2192.45	2268.13	2368.72	2183.78	2316.97	2381.30	2230.05
PMAX CRH Flow	2INAPX3066	Lb/hr	5547688	5649001	5469503	5530525	5649001	5425752	5636547	5745098	5551927
COLD REHEAT FLOW(3-1)	2INAPX3325	Lb/hr	5549647	5649782	5470870	5532766	5649782	5426924	5637598	5746855	5552904
BLR PRESSURES											
FURNACE PRESS	2COAXI083A	INWC	-0.52	0.81	-0.98	-0.49	0.81	-0.98	-0.48	0.11	-1.02
WW GAS OUT PRESS	2SGAPX3836	INWC	-0.51	-0.13	-0.95	-0.52	-0.13	-0.95	-0.50	0.10	-0.80
SSH PLATEN GAS OUT PRESS	2SGAPX3837	INWC	-0.51	-0.13	-0.95	-0.52	-0.13	-0.95	-0.50	0.10	-0.80
SSH INT BANK GAS OUT PRESS	2SGAPX3838	INWC	-0.55	-0.17	-0.99	-0.56	-0.17	-0.99	-0.55	0.05	-0.85
SSH OUT BANK GAS OUT PRESS	2SGAPX3839	INWC	-0.72	-0.33	-1.16	-0.73	-0.33	-1.16	-0.73	-0.14	-1.01
FIN RH GAS OUT PRESS	2SGAPX3840	INWC	-1.80	-1.30	-2.22	-1.79	-1.30	-2.22	-1.80	-1.27	-2.01
HORIZ RH GAS OUT PRESS	2SGAPX3843	INWC	-3.57	-2.93	-4.02	-3.54	-2.93	-4.02	-3.51	-2.99	-3.78
PSH GAS OUT PRESS	2SGAPX3841	INWC	-3.03	-2.44	-3.47	-3.04	-2.44	-3.47	-2.98	-2.51	-3.18
ECON GAS OUT PRESS	2SGAPX3842	INWC	-3.32	-2.70	-3.76	-3.33	-2.70	-3.76	-3.25	-2.80	-3.51
SECONDARY AIR DUCT (E) PRE	2SGBPT0256	INWC	3.67	4.86	3.19	3.67	4.86	3.19	3.43	4.07	2.87
SECONDARY AIR DUCT (W) PRE	2SGBPT0257	INWC	4.21	5.00	3.73	4.22	5.00	3.73	3.97	4.41	3.53
FURNACE PRESS	2COAXI083A	INWC	-0.52	0.81	-0.98	-0.49	0.81	-0.98	-0.48	0.11	-1.02
SG EAST FLUE GAS PR	2SGAPT0171	INWC	-0.54	1.01	-0.75	-0.53	1.01	-0.75	-0.50	-0.15	-0.77
SG SEC SUPHTR FLUE GAS PR	2SGAPT0169	INWC	-1.22	0.26	-1.73	-1.22	0.26	-1.73	-1.21	-0.47	-1.84
SG HORIZ RH OUT FL GS PR	2SGAPT0167	INWC	-3.58	-1.97	-4.21	-3.54	-1.97	-4.21	-3.51	-2.72	-4.07
SG PENDANT OUTLT FL GS PR	2SGAPT0168	INWC	-1.87	-0.30	-2.46	-1.86	-0.30	-2.46	-1.85	-1.10	-2.47
SG PRI SUPHTR OUT FL GS PR	2SGAPT0166	INWC	-2.92	-1.34	-3.53	-2.92	-1.34	-3.53	-2.86	-2.08	-3.43
SG ECON OUTLET FLUE GAS PR	2SGAPT0165	INWC	-3.33	-1.71	-4.07	-3.33	-1.71	-4.07	-3.25	-2.51	-3.76
SEC AH 1A INLET PRESS	2SGAPT0164	INWC	-4.77	-3.17	-5.49	-4.79	-3.17	-5.49	-4.66	-3.82	-5.22
SEC AH 1B INLET PRESS	2SGAPT0183	INWC	-4.73	-3.11	-5.51	-4.75	-3.11	-5.51	-4.63	-3.95	-5.14
ID FANS SUCT PRESS	2COAXI084A	INWC	-24.01	-21.19	-25.87	-24.11	-21.19	-25.87	-23.05	-21.96	-24.46
ID FAN 1A OUTLET PR	2CCEPT0115	INWC	5.44	5.91	4.38	5.32	5.91	4.38	5.15	5.40	4.65
ID FAN 1B OUTLET PR	2CCEPT0116	INWC	5.11	6.17	4.51	5.14	6.17	4.51	5.05	5.48	4.43
ID FAN 1C OUTLET PR	2CCEPT0117	INWC	5.43	6.08	4.64	5.43	6.08	4.64	5.03	5.53	4.42
ID FAN 1D OUTLET PR	2CCEPT0118	INWC	5.28	6.26	4.18	5.21	6.26	4.18	5.10	5.77	4.50
U1 CASING A DELTA PRESS	2CCBA40001	INWC	8.00	9.37	7.16	8.00	9.37	7.16	7.56	8.47	6.99
U1 CASING B DELTA PRESS	2CCBB40001	INWC	8.30	9.22	7.62	8.30	9.22	7.57	7.82	8.37	7.19
U1 CASING C DELTA PRESS	2CCBC40001	INWC	7.87	8.85	7.14	7.91	8.85	7.10	7.43	8.01	6.77
Boiler Heat Duty	2SGAPX3563	MBTU/H	7410.42	7525.04	7281.41	7392.68	7525.04	7277.84	7426.85	7522.84	7286.90
Water Walls Heat Duty	2SGAPX3690	MBTU/H	3285.14	3342.08	3252.97	3271.90	3342.08	3217.87	3348.09	3400.52	3299.36
SSH Platens Heat Duty	2SGAPX3691	MBTU/H	537.45	568.01	511.06	543.66	575.03	511.06	558.20	580.34	533.59
SSH Int Heat Duty	2SGAPX3692	MBTU/H	818.49	880.40	770.35	806.97	880.40	754.66	824.99	868.56	783.29

SSH Out Heat Duty	2SGAPX3693	MBTU/H	405.50	426.47	380.63	395.71	426.47	372.26	394.78	416.27	359.57
RH Outlet Heat Duty	2SGAPX3694	MBTU/H	568.32	585.65	521.56	567.64	585.65	521.56	530.02	562.40	499.47
PSH Heat Duty	2SGAPX3695	MBTU/H	800.35	843.23	739.16	808.35	852.81	739.16	754.50	784.57	725.79
Econ Heat Duty	2SGAPX3696	MBTU/H	277.13	287.85	269.40	282.02	293.95	269.40	269.38	280.10	255.93
Pri RH Heat Duty	2SGAPX3697	MBTU/H	621.67	645.71	591.81	622.87	645.71	591.81	651.25	689.72	615.92
Blr Section Heat Duty Summation	Calc	MBTU/H		Tag not found: -	Tag not found: -5		Tag not found: -	Tag not found: -5		Tag not found: -	Tag not found: -5
Blr Absorption Efficiency	Calc	%									
Boiler In-Out Efficiency	2SGAPX3561		86.16	87.74	84.74	86.32	87.74	84.49	90.28	92.22	88.20
Boiler Heat Loss Efficiency	2SGAPX3550		89.27	89.36	89.07	89.26	89.36	89.07	89.45	89.61	89.33
Cleanliness											
Waterwalls	2SGAPX3577		0.80	0.83	0.78	0.79	0.83	0.77	0.82	0.91	0.79
SH Primary Bank	2SGAPX3628		0.87	0.90	0.83	0.85	0.90	0.82	0.84	0.89	0.82
SSH Platens	2SGAPX3587		0.73	0.78	0.68	0.74	0.79	0.68	0.77	0.83	0.75
SSH Intermediate Bank	2SGAPX3598		0.80	0.87	0.75	0.78	0.87	0.73	0.81	0.86	0.75
SSH Outlet Bank	2SGAPX3608		0.65	0.72	0.60	0.62	0.72	0.57	0.64	0.78	0.59
RH Primary Banks	2SGAPX3648		0.86	0.90	0.84	0.85	0.90	0.83	0.88	0.91	0.85
RH Outlet Banks	2SGAPX3618		0.86	0.91	0.80	0.83	0.91	0.78	0.77	0.83	0.71
Econ Banks	2SGAPX3638		0.88	0.93	0.85	0.87	0.93	0.83	0.89	0.93	0.85
Flame Temp	2SGAPX3571		3677	3730.70	3598.13	3704	3759.64	3598.13	3793	3862.67	3723.01
FEGT	2SGAPX3572		2217	2243.60	2160.22	2233	2273.87	2160.22	2245	2275.70	2196.48
Backpass Inlet	2SGAPX3665		1505	1656.42	1450.97	1522	1671.32	1450.97	1520	1656.06	1475.75
Pulverizer Data	2COAXI001A	Total TP	368.52	378.41	360.09	368.97	378.41	360.09	355.73	365.10	350.10
Pulv 1A Coal Flow (TPH)	2COAXI002A		53.33	56.03	51.05	53.41	56.03	51.05	50.86	52.84	48.94
Pulv 1B Coal Flow (TPH)	2COAXI003A		54.18	56.19	52.04	54.26	56.19	52.04	51.71	53.70	49.86
Pulv 1C Coal Flow (TPH)	2COAXI004A		50.61	52.68	48.53	50.68	52.68	48.53	48.17	50.54	46.24
Pulv 1D Coal Flow (TPH)	2COAXI005A		0.10	0.10	0.10	0.10	0.10	0.10	51.64	53.86	49.95
Pulv 1E Coal Flow (TPH)	2COAXI006A		53.97	56.24	51.77	54.05	56.24	51.77	51.48	53.70	49.23
Pulv 1F Coal Flow (TPH)	2COAXI007A		52.90	57.53	48.70	52.99	59.04	46.38	50.45	53.43	49.04
Pulv 1G Coal Flow (TPH)	2COAXI008A		53.84	57.00	51.08	53.94	57.00	51.08	51.35	53.89	49.21
Pulv 1H Coal Flow (TPH)	2COAXI009A		49.84	52.26	47.26	49.91	52.26	47.26	0.15	0.15	0.14
Pulv 1A PA Damper Pos	2COAKS021A		78.79	79.40	77.87	78.50	79.40	77.87	75.55	75.95	75.15
Pulv 1B PA Damper Pos	2COAKS022A		68.97	69.75	68.00	68.80	69.75	68.00	66.49	67.07	65.77
Pulv 1C PA Damper Pos	2COAKS023A		70.89	72.08	70.20	71.06	72.25	70.20	69.13	70.00	68.00
Pulv 1D PA Damper Pos	2COAKS024A		0.00	0.00	0.00	0.00	0.00	0.00	70.62	73.13	68.15
Pulv 1E PA Damper Pos	2COAKS025A		71.58	72.13	70.53	71.57	72.15	70.53	69.10	72.20	66.33
Pulv 1F PA Damper Pos	2COAKS026A		76.09	81.12	71.37	76.54	81.12	71.37	73.01	77.40	68.10
Pulv 1G PA Damper Pos	2COAKS027A		75.57	76.27	74.58	75.37	76.27	74.58	70.72	71.24	70.20
Pulv 1H PA Damper Pos	2COAKS028A		78.71	79.20	77.22	79.02	79.70	77.22	0.00	0.00	0.00
Pulv 1A Inlet PA Temp	2SGATE0639		309.94	310.81	307.20	307.24	310.81	301.20	281.18	282.71	279.10
Pulv 1B Inlet PA Temp	2SGATE0640		316.95	323.68	305.94	318.03	327.61	305.94	290.24	293.54	287.42
Pulv 1C Inlet PA Temp	2SGATE0641		298.17	303.90	291.79	295.75	303.90	290.56	273.68	277.37	270.92
Pulv 1D Inlet PA Temp	2SGATE0642		97.21	100.18	93.01	100.84	103.86	93.01	304.72	311.28	297.31
Pulv 1E Inlet PA Temp	2SGATE0643		312.85	316.46	310.62	308.57	316.46	301.86	292.85	302.49	286.48
Pulv 1F Inlet PA Temp	2SGATE0644		336.09	341.22	322.95	332.33	341.27	320.70	300.60	307.36	294.80
Pulv 1G Inlet PA Temp	2SGATE0645		318.43	325.57	307.24	314.99	325.57	307.24	283.21	287.27	280.51
Pulv 1H Inlet PA Temp	2SGATE0646		293.50	299.51	284.75	288.24	299.51	279.89	106.31	111.81	102.61
Pulv 1A Outlet Temp	2COAXI064A		150.64	151.10	150.00	150.62	151.40	150.00	150.82	150.95	150.46
Pulv 1B Outlet Temp	2COAXI065A		153.68	154.10	153.03	153.60	154.10	152.80	153.53	153.75	153.15
Pulv 1C Outlet Temp	2COAXI066A		150.57	150.60	150.38	150.31	150.60	150.15	150.15	150.15	150.15
Pulv 1D Outlet Temp	2COAXI067A		87.30	88.60	86.11	89.74	92.20	86.11	149.74	150.15	149.20
Pulv 1E Outlet Temp	2COAXI068A		151.21	151.25	151.01	151.08	151.25	150.80	151.09	151.55	150.60

Pulv 1F Outlet Temp	2COAXI069A	148.70	149.35	148.40	148.72	149.35	147.65	148.86	149.35	148.25
Pulv 1G Outlet Temp	2COAXI070A	149.97	150.95	149.35	150.03	150.95	149.35	150.08	150.45	149.70
Pulv 1H Outlet Temp	2COAXI071A	150.23	151.40	148.90	150.19	151.40	148.90	107.40	108.82	106.80
Calculated Mass Flow lb/min										
Pulv 1A	2SGBPE0056	3637.64	3654.81	3620.47	3668.01	3698.29	3620.47	3653.25	3667.77	3642.71
Pulv 1B	2SGBPE0057	3592.03	3592.30	3591.75	3588.69	3593.19	3534.20	3576.64	3641.22	3544.11
Pulv 1C	2SGBPE0058	3745.98	3752.48	3709.99	3756.89	3770.81	3709.99	3698.02	3709.51	3694.04
Pulv 1D	2SGBPE0059	334.93	340.88	329.07	346.94	365.01	329.07	3459.42	3480.66	3438.18
Pulv 1E	2SGBPE0060	3632.54	3641.35	3564.30	3634.93	3641.35	3564.30	3601.34	3653.28	3575.24
Pulv 1F	2SGBPE0061	3592.53	3595.90	3567.23	3598.63	3608.24	3567.23	3571.72	3667.45	3523.24
Pulv 1G	2SGBPE0062	3887.37	3890.39	3861.44	3891.89	3898.62	3861.44	3836.18	3843.17	3833.43
Pulv 1H	2SGBPE0063	3955.93	4000.09	3911.78	4047.68	4189.45	3911.78	0.00	0.00	0.00
Windbox Pos										
Pulv 1A	2COAKS007A	79.23	82.30	76.55	79.15	82.30	76.55	74.66	77.10	72.43
Pulv 1B	2COAKS003A	79.06	82.17	76.23	78.99	82.17	76.23	74.56	77.00	72.10
Pulv 1C	2COAKS005A	74.08	77.50	71.22	73.99	77.50	71.22	69.48	71.93	67.00
Pulv 1D	2COAKS009A	55.21	57.12	40.75	56.49	57.13	40.75	74.73	77.15	72.43
Pulv 1E	2COAKS010A	79.65	82.20	76.88	79.64	82.20	76.88	75.07	77.53	72.80
Pulv 1F	2COAKS006A	79.15	81.80	76.25	79.02	81.80	76.25	74.54	77.00	72.10
Pulv 1G	2COAKS004A	79.27	82.27	76.25	79.16	82.27	76.25	74.68	77.13	72.35
Pulv 1H	2COAKS008A	72.52	75.40	69.65	72.43	75.40	69.65	96.30	96.30	96.30
PA Flow %										
Pulv 1A	2COAXI056A	92.46	93.05	91.92	92.70	93.05	91.92	91.25	91.85	90.70
Pulv 1B	2COAXI057A	90.96	91.88	90.35	91.07	91.88	90.35	89.27	89.87	88.65
Pulv 1C	2COAXI058A	94.76	95.85	93.43	94.85	95.85	93.43	93.09	94.45	92.32
Pulv 1D	2COAXI059A	8.45	8.73	8.10	8.90	9.50	8.10	85.86	88.95	82.48
Pulv 1E	2COAXI060A	91.78	92.28	91.15	91.81	92.28	91.15	89.84	90.55	89.28
Pulv 1F	2COAXI061A	90.71	91.60	89.95	90.80	91.60	89.95	89.04	90.15	88.35
Pulv 1G	2COAXI062A	97.90	98.38	97.42	98.11	98.38	97.42	96.49	97.30	96.12
Pulv 1H	2COAXI063A	99.45	99.60	99.30	99.73	100.00	99.30	0.00	0.00	0.00
Pulv air Bias										
Pulv 1A	2COAXI211A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1B	2COAXI212A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1C	2COAXI213A	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69
Pulv 1D	2COAXI214A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1E	2COAXI215A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1F	2COAXI216A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1G	2COAXI217A	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60
Pulv 1H	2COAXI218A	14.07	14.07	14.07	14.07	14.07	14.07	7.47	7.47	7.47
Pulv Coal Bias										
Pulv 1A	2COAXI221A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1B	2COAXI222A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1C	2COAXI223A	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00
Pulv 1D	2COAXI224A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1E	2COAXI225A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1F	2COAXI226A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1G	2COAXI227A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulv 1H	2COAXI228A	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-2.90	-2.90	-2.90
Drum Level	2COAXI019S	0.31	1.95	-1.11	0.30	1.99	-1.74	0.03	1.63	-1.47
SAH 1A Flue Gas Out O2	2SGBAZ0022	5.57	6.13	5.06	5.75	6.20	5.06	5.02	5.55	4.54
SAH 1B Flue Gas Out O2	2SGBAZ0023	4.46	4.58	4.30	4.42	4.58	4.27	4.53	4.67	4.39
East Flue Gas O2	2COAXI079A	2.37	5.61	1.91	2.43	5.61	1.86	2.49	3.08	2.06
West Flue Gas O2	2COAXI080A	2.34	4.09	1.98	2.34	4.09	1.97	2.62	2.95	2.30

Econ O2 Out	2COAXI187A	2.35	4.00	2.06	2.38	4.00	2.05	2.56	2.85	2.26
RH Bias Damper Pos	2COAXI136A	89.73	99.59	64.82	74.98	99.59	53.45	99.86	100.00	99.48
Econ/PSH Bias Damper Pos	2COAXI135A	92.90	92.90	92.90	92.90	92.90	92.90	92.90	92.90	92.90

BILL OF MATERIAL

ITEM	QUTY	DESCRIPTION
	1632'	2.0 OD x .205 MW SA213TP347H
	4080'	2.0 OD×.320 SA213T22

BILL OF MATERIALS LENGTHS ARE PER TUBE BUNDLE

TUBE	
MATERIAL	DESCRIPTION
SA213T2	
SA210A1	
SA213T9	
SA213T12	
SA213T22	
SA213TP304H	
SA213TP321H	
SA213TP347H	

HEADER	
MATERIAL	DESCRIPTION
SA106C	
SA516-70	
SA335P11	
SA335P22	

COLOR CODE

COLOR CODE

SECONDARY SH PLATEN
SSHP

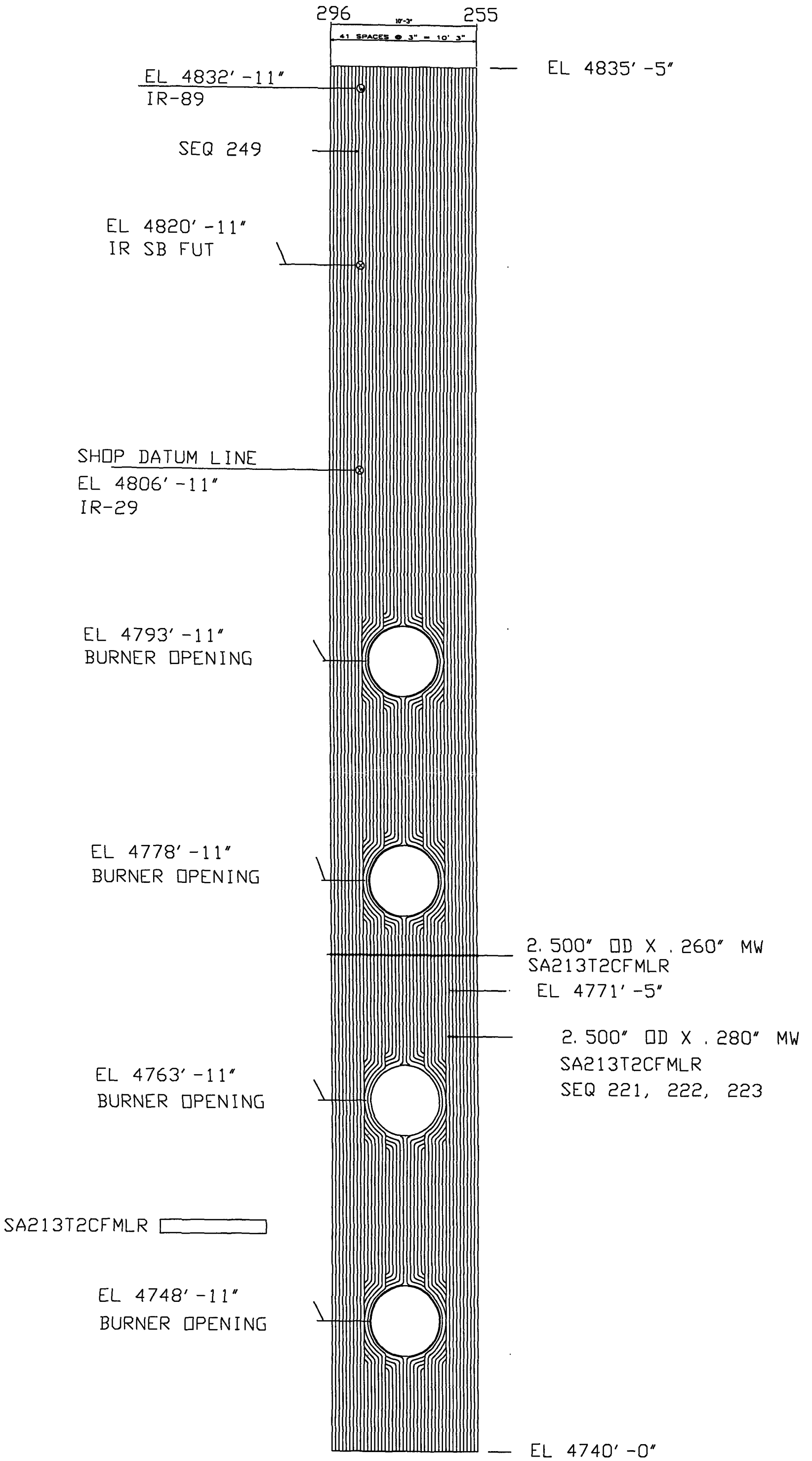
NO.	DATE	DESCRIPTION OF REVISIONS	BY	CHK	APP
0	7-02-02	IGS 02-14 ISSUED FOR APPROVAL	BW	JHN	JHN

REV.	DRAWING NUMBER
0	SSHP

INTERMOUNTAIN POWER PROJECT

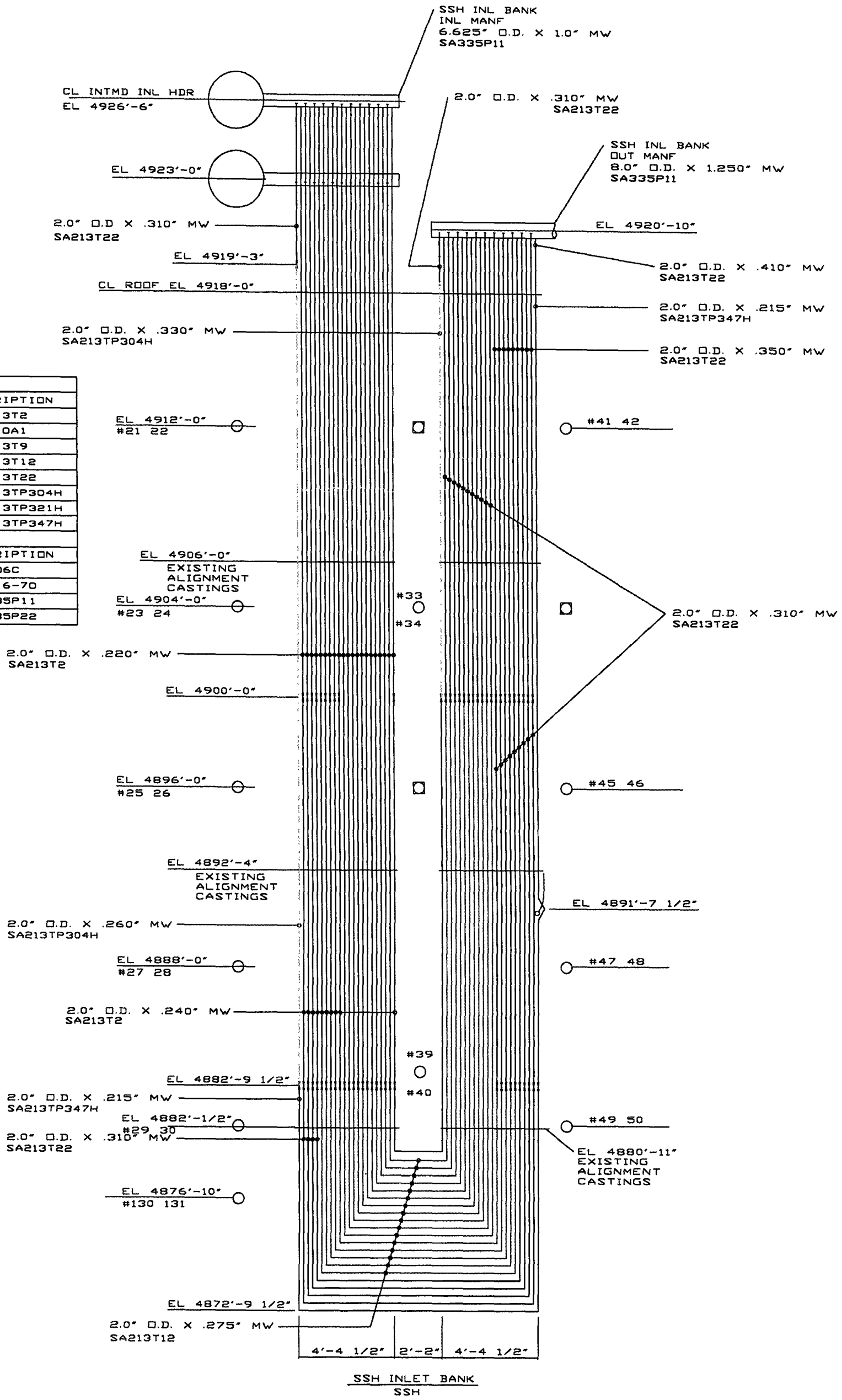
SECONDARY SH PLATEN
SSHP

IP7_036229



FURNACE FRONT WALL AF 10
852
408271E

IP7_036230



	TUBE
COLOR CODE	MATERIAL DESCRIPTION
	SA213T2
	SA210A1
	SA213T9
	SA213T12
	SA213T22
	SA213TP304H
	SA213TP321H
	SA213TP347H
	HEADER
COLOR CODE	MATERIAL DESCRIPTION
	SA106C
	SA516-70
	SA335P11
	SA335P22

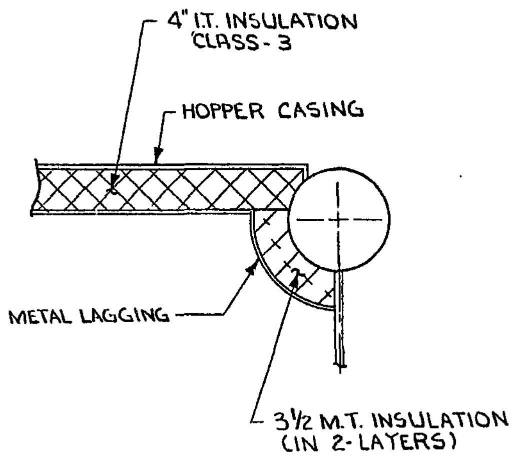
IP7_036231

B&V 9255,62,3401,06-10264

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION

FURNACE HOPPER

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.
1	[illegible]	REVISED	
2	9/20/72	CHG'D TYPE II INSUL. TO CLASS-3	BBF/LWF



SECTION-70M

STANDARD LOCKED DRAWER DRAWING

DWN. BY SOLOMON	CHK'D PETERMAN	INSULATION DETAILS	SCALE N.T.S. DATE 5-24-63
PASSED BY ESTEP	APP'D AHD/E		DRWG. NO. 63915 A-2

FORM BDM 1067 A-1

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION
INSULATION DESIGN

THERMOCOUPLE JUNCTION BOX

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.
1	5/4/63	REVISED	WJS
2	1/8/67	REVISED	SE

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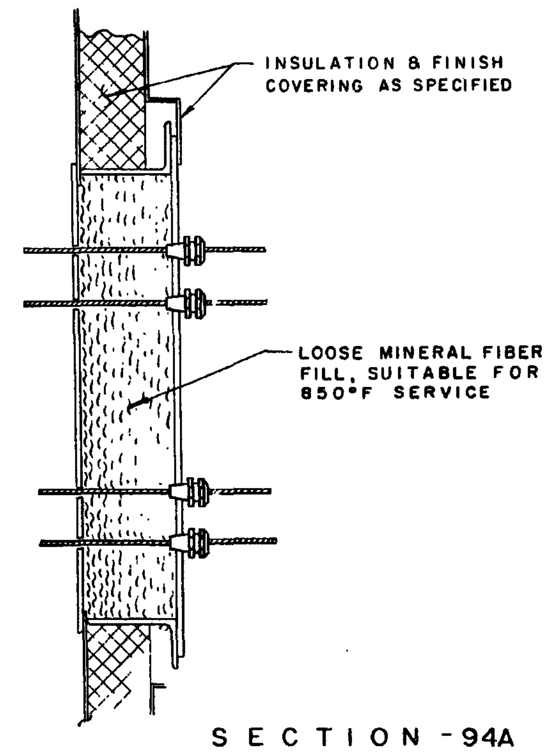

SECTION -94A

DWN. BY JUSTICK	CHK'D —	INSULATION DETAILS	SCALE NTS DATE 4-19-63
PASSED BY KATZ	APP'D AHD/P		DRWG. NO. 48776 A

FORM BDM 1067 A-1

STANDARD LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION
INSULATION

THERMOCOUPLES

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.
1	12/24/63	REVISED	WJS
2	3/26/64	DELETED-FURNISHED & APPLIED-	WJS
3	1-20-?	CHGD INSUL. FROM H.T.	LWF
4	6-?	REVISED	SE

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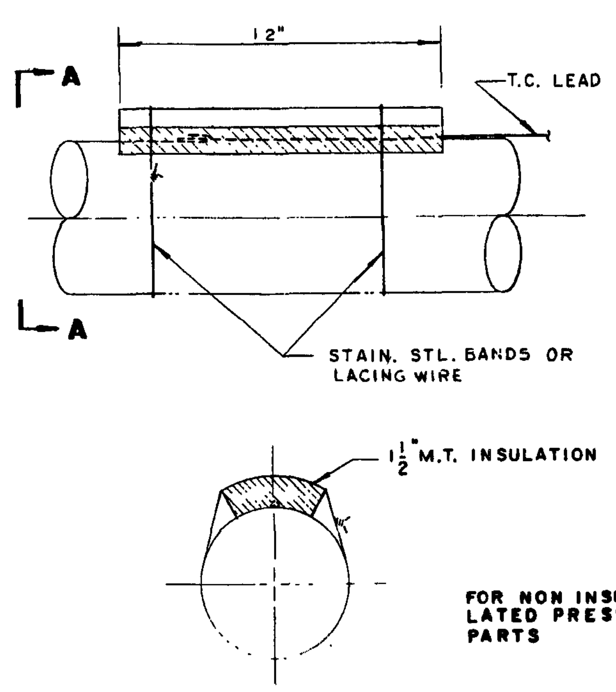

FOR NON INSULATED PRESSURE PARTS

VIEW A-A

SECTION - 94B

DWN. BY JUSTICK	CHK'D —	INSULATION DETAILS	SCALE NTS DATE 4-19-63
PASSED BY KATZ	APP'D AHD/P		DRWG. NO. 48777 A

FORM BDM 1067 A-1

STANDARD LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

REVISIONS			MICRO FILM
DASH NO.	DATE	DESCRIPTION	ORIG

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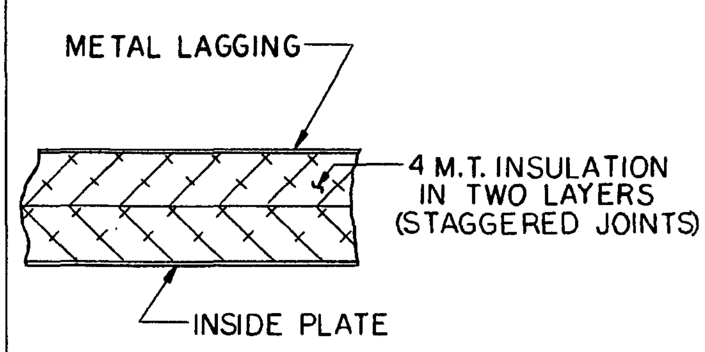


SECTION M.T.P.-4.0

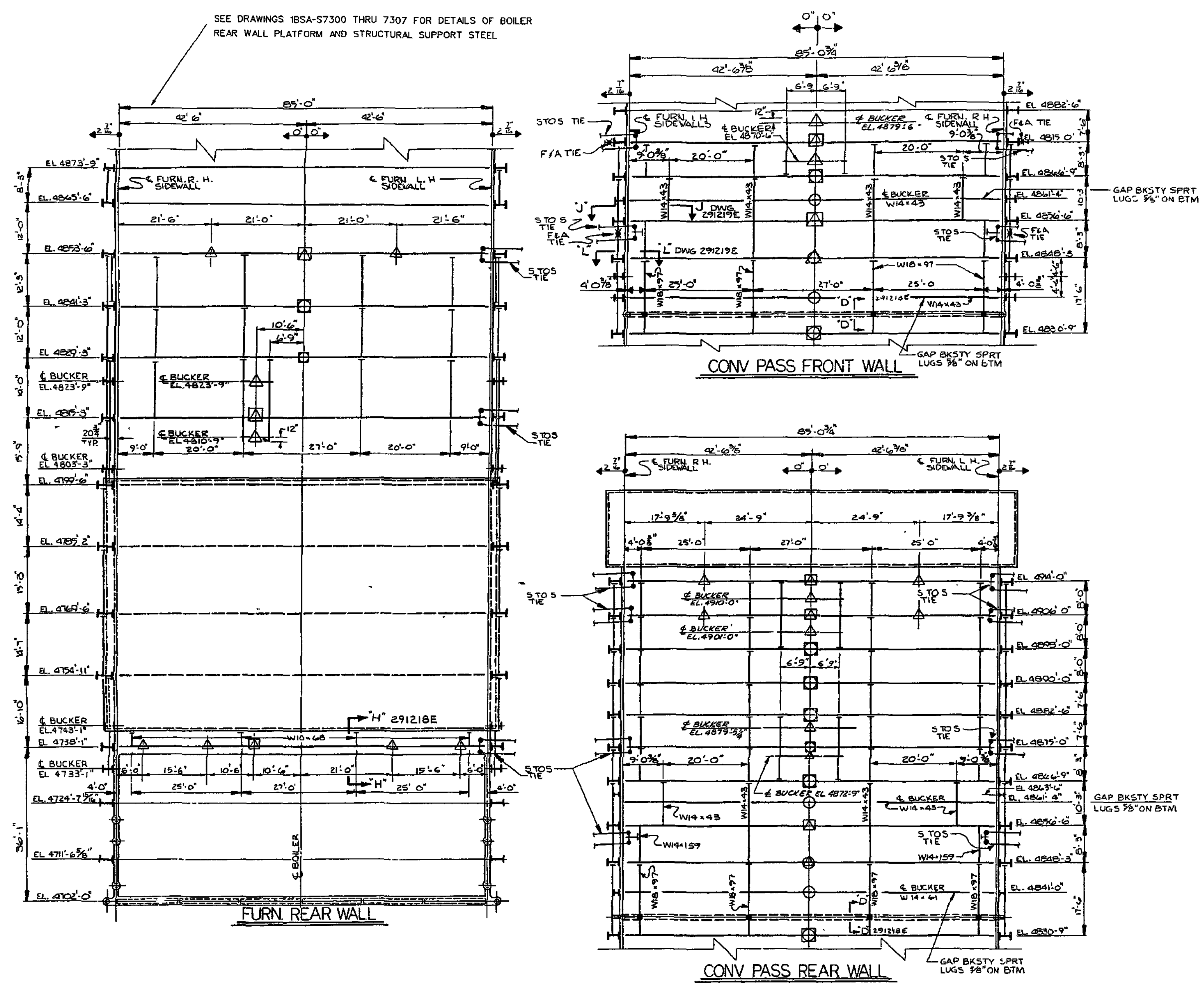
K&E NO. 19-1283

DWN. BY ADAMS	CHK'D WISTOLL	INSULATION DETAIL	SCALE — DATE 10-10-7?
PASSED BY	APP'D		DRWG. NO. 93215 A-0

▲ LOCKED DRAWER DRAWING

FORM BDM 1067 A-4

SEE DRAWINGS 1BSA-S7300 THRU 7307 FOR DETAILS OF BOILER REAR WALL PLATFORM AND STRUCTURAL SUPPORT STEEL



REVISIONS

REVISION NO	DESCRIPTION	DATE	APPROVAL
1	REV LOCATION OF LATERAL TIE @ FURN REAR WALL @ EL. 4738'-1" FROM 10'-0" TO 12'-0" FROM ℄ BOILER. RELOCATED CPFW & R.W. OVERTURNING POSTS BETWEEN ELS 4866'-9" & 4856'-6" FROM 9'-0 3/8" TO 9'-0 3/8" FROM SIDEWALLS. INDICATED SECTIONS "J"-"J" & "L"-"L". HAZ1/ R. BRECHUN/	8/25/82	
2	CHG'D ANCHOR LOCTS FROM 10'-0" & 12'-0" TO 10'-6" ON FRW ADDED WALL ANCHOR BUCKERS, POSTS & ADDITIONAL WALL ANCHOR LOCTS. ADDED ADDITIONAL CONTRACT NOS ADDED BUCKER BEAM @ EL 4861'-4" ON CPFW ADDED OT POST INFO. ADDED LWR FSW HDRS. CHG'D EL OF CPSW BUCKS. FROM 4861'-4" TO 4863'-6". ADDED NOTE FOR STD BUCKER & BUCKER POST SIZES. ADDED BUCKER BEAMS BTWN POSTS @ CPSW SCAFFOLD DOOR POSTS. A.J.P./ ROHNER	11/18/82	
3	ADDED BUCKERS ON CPSW @ CPFW VIEW FOR EL 4843'-9" & 4843'-9. CHGD. CPRW BUCKER EL'S 4879'-5 1/4" & 4872'-9" TO 4870'-6" TO 4879'-5 1/4" & 4872'-9". ADDED TRUSS & TIE BAR TO WALL DESIGNATION @ CPRW EL. 4875'-0". ADDED TRUSS TO TIE BAR DESIGNATION @ LATERAL TIE EL'S/HAZ1/ Rohner/	12/3/82	
4	ON CONV PASS F.W. & CONV PASS R.W. CHGD O.T. POSTS BETWEEN BKSTY EL. 4856'-6" & EL. 4848'-3" FROM FREE ONE END TO FIXED BOTH ENDS. ON FURN R.W. ADDED INDICATION OF ANCHOR AT ℄ BLR AT EL. 4848'-3". CPFW & C.PRW AT 0'-0" EL. 4853'-6" ON DELEATED TIE BAR TO BKSTY SYMBOL. CHG'D FSW BKSTY ELs 4724'-9" & 4711'-8" TO 4724'-7 15/16" & 4711'-6 5/8". ADDED BKSTY SPRT LUG GAPS TO BUCKER ELS AND NOTE 2. ADDED BKSTY TO TIE BAR INDICATIONS @ BUCKER ELS 4861'-4" & 4839'-3" ON THE CPFW ELS 4861'-4" & 4841'-0" PLUS, BKSTY EL 4848'-3" ON CPFW & R.W. ADDED POST END LOCATION. E. Miller/ M. Rohner/	2/11/83	
5	ADDED NOTE REFERING TO ARRGT DWG'S. PER PROJ. ENG LETTER 8-8-83	11/8/83	T. Nagy
6	IGS96-1z PE *166870 DEW (3-A) ADDED REF NOTE TO SUPPORT STEEL DRAWINGS		
7	IGS98-1g PE 176578 HRH (3-A) REVISED NOTE AND ADDED DWG 1BSA-S7300 THRU 7303		

NOTES

1. W12×65 ... POSTS FOR ALL BKSTY TRUSSES UNLESS NOTED
2. USE W8×31 OT POSTS FOR ALL FSW & CPSW BKSTYS UNLESS NOTED
3. ... W30×99 FOR ALL WALL ANCHOR BUCKER BEAMS
4. USE W18×106 FOR ALL WALL ANCHOR BUCKER BEAM POSTS.
5. USE 6"×1" TIE BARS FOR BUCKER BEAM LOCATIONS.
6. FOR OT POST TO BUCKER CONN... SEE ... ON DWG 291264E.

B&V 9255.62.34 1.05.10536 1

☒ NO EXCEPTIONS NOTED
☐ EXCEPTIONS NOTED REVISE & RESUBMIT FOR DISTRIBUTION
☐ RETURNED FOR CORRECTION

DEC 21 1983

REVIEW DOES NOT RELIEVE ... FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS FROM CONTRACT REQUIREMENTS

BLACK & VEATCH

NOTE

BUCKSTAY LAYOUT DRAWINGS:

291214E	291219E	291262E
291215E	291220E	291263E
291216E	291224E	291264E
291217E	291225E	291265E
291218E	291226E	291266E
	291248E	1497250

REFERENCED LAYOUT DRAWINGS REFLECT FRONT END ENGINEERING DESIGN AND CONFIGURATION.
FOR "AS DETAILED" INFORMATION, REFER TO BUCKSTAY ARRANGEMENT AND DETAIL DWG'S 408810E TO 408824E INCL.

MECH FILE COPY

INTERMOUNTAIN POWER PROJECT
STEAM GENERATOR UNITS 1, 2, 3, & 4
PROJECT FILE 9255.62.3401
IPA CONTRACT 2010N
FOR NOTES, DWG. REFERENCES, / BKSTY DATA TABLES SEE DWG 291214E.
B&V 9255.62.3401.05.10536 1

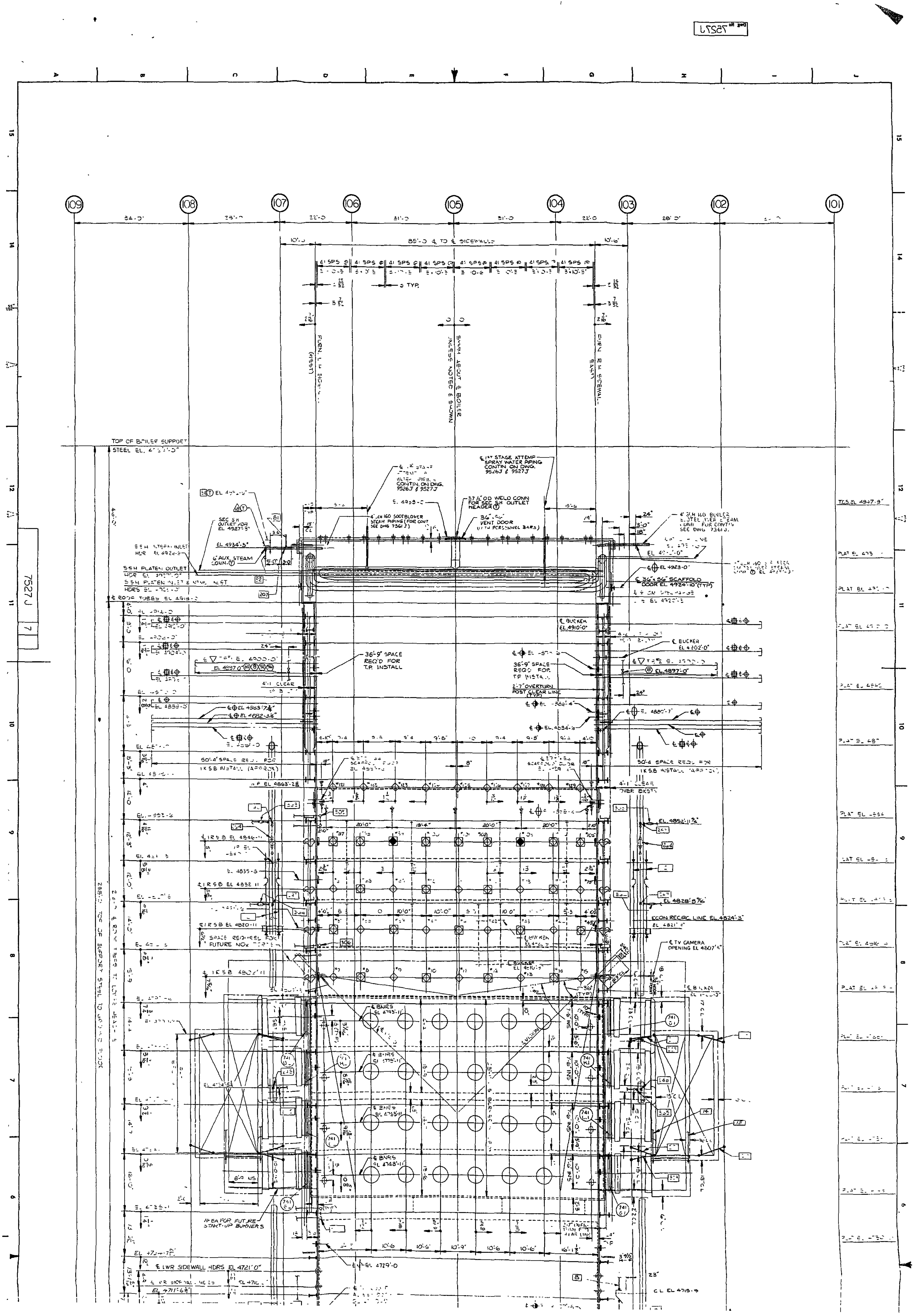
334-0615	DWN. BY R. SUSALLA	KEY LAYOUT OF BUCKSTAYS FURN. REARWALL & CONV. PASS FRONT & REARWALL
334-0616	CHKD. BY R. BRECHUN	
334-0617	PASSED BY ... / APPVD. BY ...	
	334-0614	SCALE 3/32" = 1'-0"

THE BABCOCK & WILCOX CO. POWER GENERATION GROUP

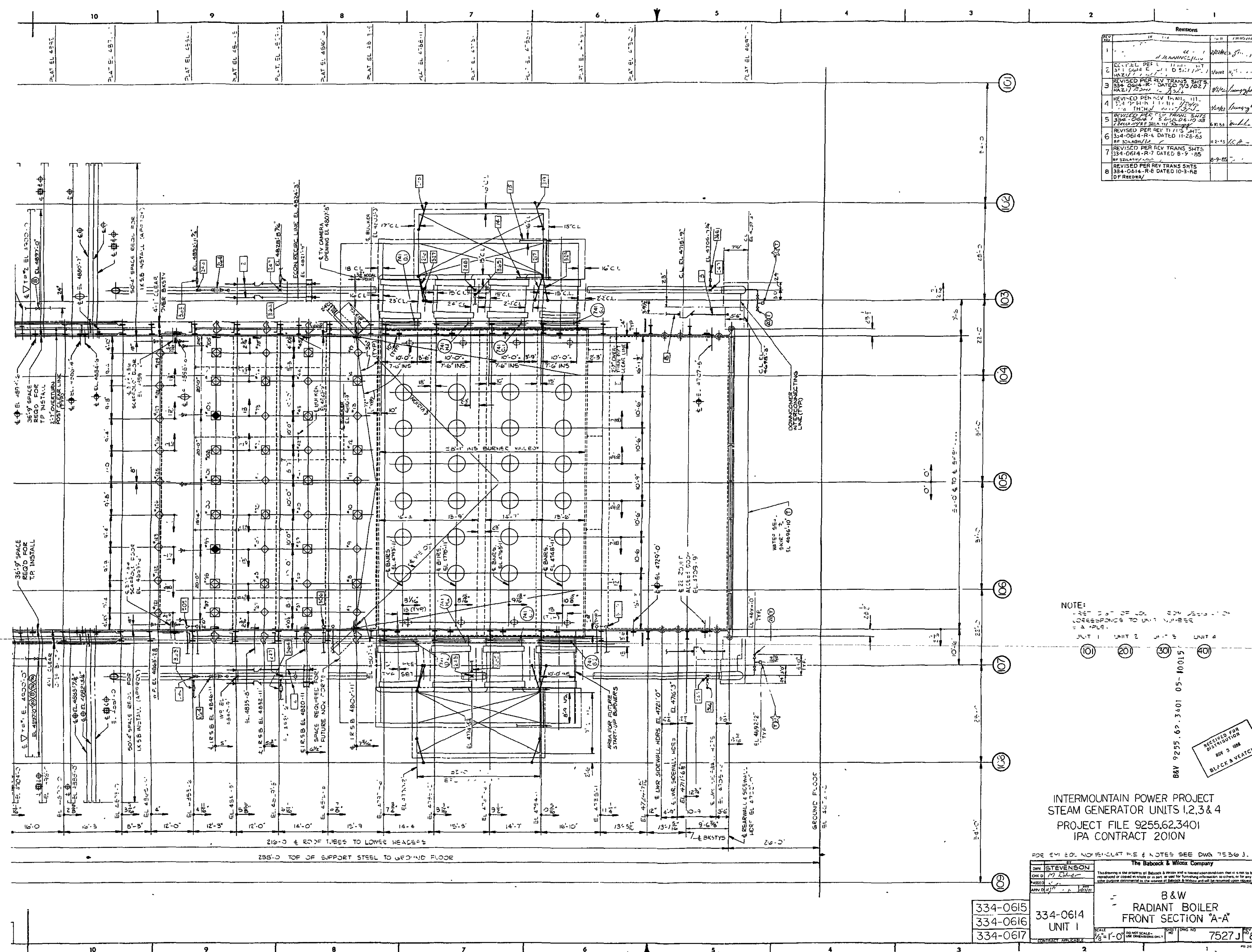
DWG NO. 291216E REV 7

7-8-99

IP7_036233


Dwg No 7527J
7527J
7
109
108
107
106
105
104
103
102
101
34'-0"
22'-0
31'-0
22'-0
28'-0"
10'-0
85'-0 ℄ TO ℄ SIDEWALLS
10'-6"
41 SPS @
3 TYP.
SYMM ABOUT ℄ BOILER UNLESS NOTED & SHOWN
FURN. L H SIDEWALL (WEST)
FURN R H SIDEWALL (EAST)
TOP OF BOILER SUPPORT STEEL EL
℄ 1ST STAGE ATTEMP SPRAY WATER PIPING CONTIN. ON DWG. 9526J & 9527J
CONTIN. ON DWG. 9526J & 9527J
4" SCH 160 SOOTBLOWER STEAM PIPING (FOR CONT SEE DWG 7361J)
37 ½" OD WELD CONN FOR SEC SH OUTLET HEADER (T)
36" VENT DOOR
SEC SH OUTLET HDR EL 4927'-3"
EL 4934'-3"
6" AUX STEAM CONN. (T)
SSH PLATEN OUTLET
SSH PLATEN INLET
℄ ROOF TUBES EL
36'-9" SPACE REQ'D FOR T.P. INSTALL
4'-1 CLEAR
EL 4897'-0"
℄ EL 4883'-7 ¼"
℄ EL 4882'-3 ½"
50'-4" SPACE REQ'D FOR IKSB INSTALL (APPROX)
EL 4863'-2⅞
℄ IRSB EL 4846
EL 4835-6
℄ IRSB EL 4832 11
℄ IRSB EL 4820-11
SPACE REQUIRED FOR FUTURE NOx
℄ IKSB 4802'11
℄ BNRS EL 4793'-11"
℄ BNRS EL 4778'-11"
℄ BNRS EL 4763'-11"
℄ BNRS EL 4748'-11"
EL 4774'-5¾
8'-0 NS
AREA FOR FUTURE START-UP BURNERS
℄ LWR SIDEWALL HDRS EL 4721'0"
EL 4711'-6⅝"
EL 4729'-0
4" SCH 160 BOILER OUTLET STEAM CONN. FOR CONT SEE DWG 7361J.
℄ EL 4923-0'
℄ 36"x56" SCAFFOLD DOOR EL 4924'-10" (TYP)
℄ BUCKER EL 4910'-0"
℄ BUCKER EL 4902'-0"
36'-9" SPACE REQ'D FOR TP INSTALL
2'-7" OVERTURN POST CLEAR LINE (TYP)
EL 4880'-7"
EL 4854'-3
50'-4 SPACE REQ'D FOR IKSB INSTALL (APPROX)
4'-1" CLEAR OVER BKSTY
EL 4852'-11 ¾"
EL 4828'-8 9/16"
ECON RECIRC LINE EL 4824'-3"
EL 4821'-4"
℄ TV CAMERA OPENING EL 4807'5"
36" (TYP)
741
VISION
3'-9½
23"
C L EL 4715-9
T.C.S. EL 4947-9"
PLAT EL
20'-0"
19'-4"
10'-0"
10'-6
10'-6'
10'-9'
16'-1½"

IP7_036234



Revisions

REV NO		DATE	APPROVAL
1	JENNINGS	2/22/82	
2	REVISED PER ... 334-0614-R... HAZI/	5/21/82	
3	REVISED PER REV TRANS SHTS. 334-0614-R- DATED 9/3/82 / HAZI/		
4	REVISED PER REV TRANS SHTS 334-0614-R... THIRD/	1/20/83	
5	REVISED PER REV TRANS SHTS 334-0614-R-5 DATED 6-10-83 RF SZILAGYI/	6-10-83	
6	REVISED PER REV TRANS SHTS 334-0614-R-6 DATED 11-28-83 RF SZILAGYI/	11-28-83	
7	REVISED PER REV TRANS SHTS 334-0614-R-7 DATED 8-9-85 RF SZILAGYI/	8-9-85	
8	REVISED PER REV TRANS SHTS 334-0614-R-8 DATED 10-3-88 DF REEDER/		

NOTE:
FIRST DIGIT OF COLUMN ROW DESIGNATION CORRESPONDS TO UNIT NUMBER
EXAMPLE:
UNIT 1 (101) UNIT 2 (201) UNIT 3 (301) UNIT 4 (401)

B&V 9255.62.3401 05-10015

RECEIVED FOR DISTRIBUTION NOV 3 1988 BLACK & VEATCH

334-0614
DWG NO 12527

INTERMOUNTAIN POWER PROJECT
STEAM GENERATOR UNITS 1,2,3 & 4
PROJECT FILE 9255.62.3401
IPA CONTRACT 2010N

FOR SYMBOL NOMENCLATURE & NOTES SEE DWG 7536 J.

The Babcock & Wilcox Company

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DWN STEVENSON
CHK'D M Dahner

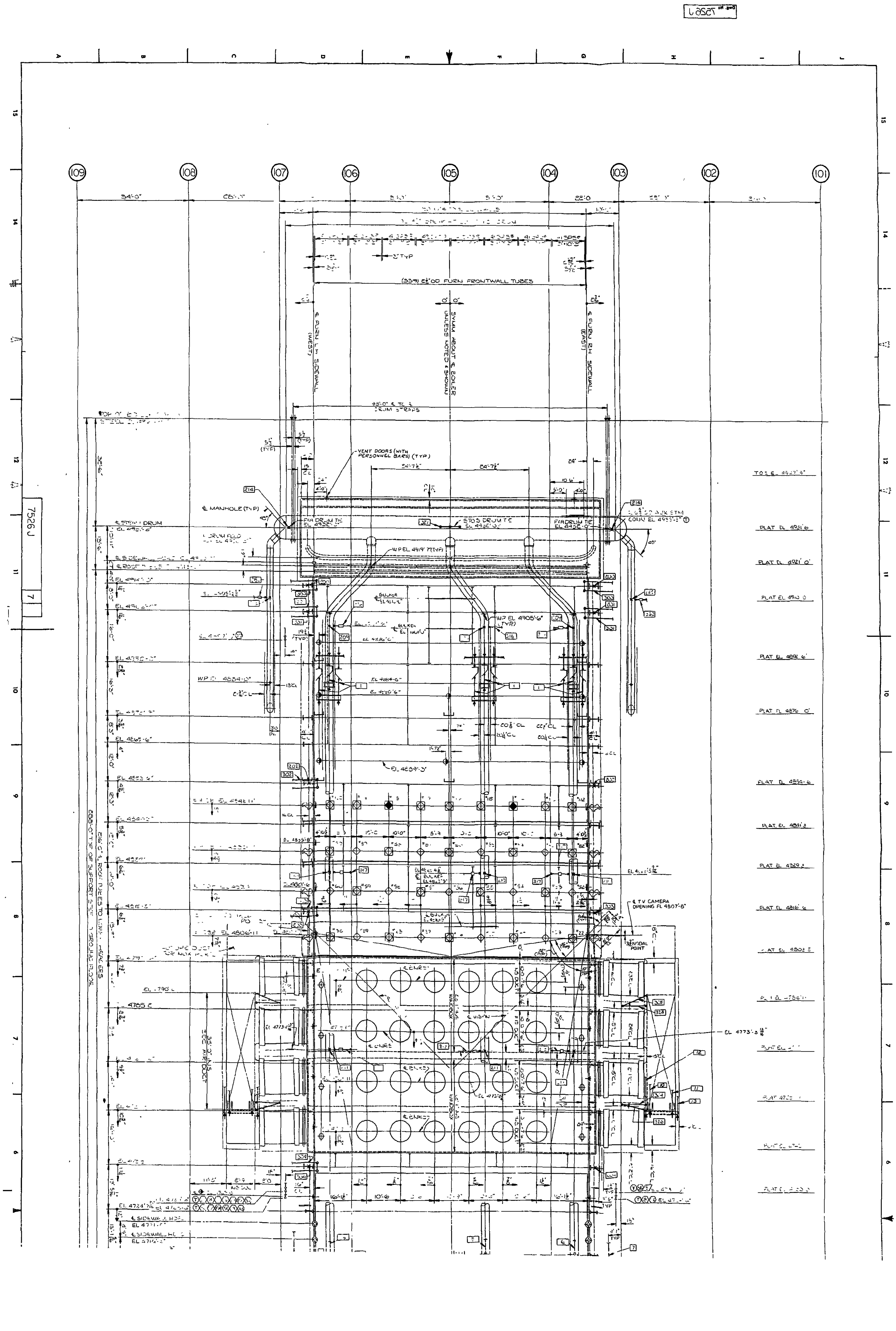
334-0615
334-0616
334-0617

334-0614
UNIT 1
CONTRACT APPLICABLE

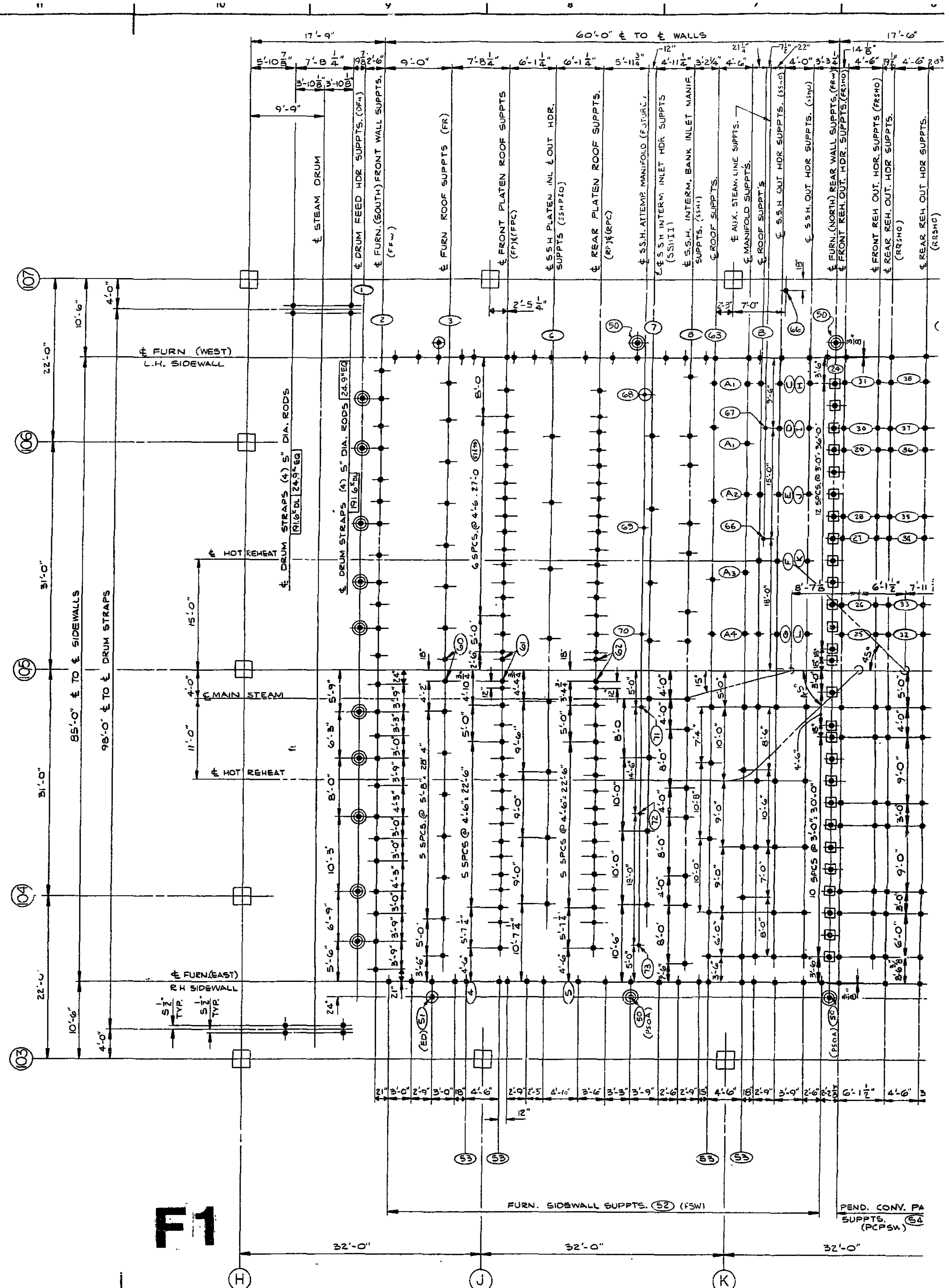
B&W
RADIANT BOILER
FRONT SECTION "A-A"

SCALE 1/8"=1'-0" | DO NOT SCALE - USE DIMENSIONS ONLY | DWG NO 7527J | REV NO 8

IP7_036235


Dwg. No 7526J
A
B
C
D
E
F
G
H
J
109
108
107
106
105
104
103
102
101
34'-0"
3'TYP
(339) 2½" OD FURN FRONTWALL TUBES
0' 0'
℄ FURN LH SIDEWALL (WEST)
SYMM ABOUT ℄ BOILER UNLESS NOTED & SHOWN
℄ FURN RH SIDEWALL (EAST)
33'-0" ℄ TO ℄ DRUM STRAPS
VENT DOORS (WITH PERSONNEL BARS) (TYP)
24'-7½"
℄ MANHOLE (TYP)
STOS DRUM TIE
F/A DRUM TIE EL 4952'-0"
W.P. EL 4919' 7"(TYP)
W.P. EL 4705'-6" (TYP)
EL 4859'-3"
℄ TV CAMERA OPENING EL 4807'-8"
NODAL POINT
WINDBOX
℄ VISION
EL 4773'-3 13/16"
EL 4765'-2"
35'-0" NS SEC AIR DUCT
℄ SIDEWALL HDR
7526J
7
TOS EL 4947'-9"
PLAT EL 4931'6
PLAT EL 4921'0'
PLAT EL 4910'0
PLAT EL 4892'6'
PLAT EL 4876'0'
PLAT EL 4859'-6
PLAT EL 4841'3
PLAT EL 4829'3
PLAT EL 4816'6
PLAT EL 4803'3
EL 4865'-6"
EL 4853'-4"
EL 4854'-0"
288'-0" TOP OF SUPPORT STEEL TO GROUND FLOOR
216'-0" ℄ ROOF TUBES TO LOWER HEADERS

IP7_036236



TAG NO	LOCATION	QTY.	DIA.	LOADS: DEAD LOAD	EARTH QUAKE	TRANS. P.L.	SUST. P.L.	THERMAL UP	THERMAL DN
1	DFH	10	1"	5.8K					
2	FFW	24	4"	116.3K	15.1K	20.1K	3.1K		0.2K
3	FR	14	1¼"	2.3K	0.3K	8.3K	1.4K		1.9K
4	FP	16	1½"	2.8K	0.4K	5.9K	1.0K		5.6K
5	RP	16	1¼"	2.3K	0.3K	3.6K	0.6K		6.0K
6	SSHPIO	8	3"	64.1K	8.3K				
7	SSHII	8	3"	43.7K	5.7K	8.8K	1.5K		4.8K
8	SSHI	14	2½"	36.2K	4.7K	9.5K	1.6K	4.3K	5.2K
A1	MANIFOLD SUPP'TS	4	2½"	48.3K	6.2K	6.8K	1.7K	6.0K	
A2	↓	2	3"	64.5K	8.4K	9.1K	1.5K	8.0K	
A3	↓	2	3"	60.2K	7.8K	8.5K	1.4K	7.5K	
A4	↓	2	3"	68.3K	8.9K	9.6K	1.6K	8.5K	
B	ROOF SUPPT'S	8	1¼"	35K	0.5K	3.6K	0.6K		6.6K
C	SSHO	2	3"	77.3K	7.5K	5.2K	0.9K	3.0K	
D	↓	2	3"	81.1K	7.5K	5.2K	0.9K	3.0K	
E	↓	2	3½"	86.7K	7.5K	5.2K	0.9K	3.0K	
F	↓	2	3½"	92.3K	7.5K	5.2K	0.9K	3.0K	
G	↓	2	3½"	98.5K	7.5K	5.2K	0.9K	3.0K	
H	↓	2	3"	76.4K	8.3K	5.7K	1.0K	3.0K	
I	↓	2	3"	79.2K	8.3K	5.7K	1.0K	3.0K	
J	↓	2	3½"	83.4K	8.3K	5.7K	1.0K	3.0K	
K	↓	2	3½"	87.6K	8.3K	5.7K	1.0K	3.0K	
L	↓	2	3½"	92.3K	8.3K	5.7K	1.0K	3.0K	
24	FRW	27	4"	101.2K	13.2K	21.0K	3.6K		2.7K
25	FRSHO	4	2½"	58.2K	4.6K			3.9K	
26	↓	4	2½"	64.6K	5.5K			1.9K	
27	↓	4	2"	36.6K	3.1K			1.9K	
28	↓	4	2"	33.5K	3.1K			1.9K	
29	↓	4	3"	69.0K	6.4K			1.9K	
30	↓	4	1½"	21.7K	2.3K			3.9K	
31	↓	4	3"	47.1K	4.8K			1.9K	
32	RRSHO	4	2½"	52.3K	4.1K				
33	↓	4	2½"	58.2K	5.0K				
34	↓	4	2"	33.0K	2.8K				
35	↓	4	2"	30.4K	2.8K				
36	↓	4	2½"	62.6K	5.7K				
37	↓	4	1½"	19.9K	2.1K				
38	↓	4	2½"	43.0K	4.3K				
39	CPFW	26	3"	49.7K	6.5K	3.3K	3.9K		0.2K
40	↓	26	2½"	44.7K	5.8K	3.3K	3.9K		0.2K
41	FRH	14	2½"	48.9K	6.4K				
42	RIHS	4	2½"	37.8K					
43	BW	22	3½"	87.3K	11.4K	9.8K	9.3K		1.7K
44	PSHO	14	2½"	35.2K	4.6K	3.6K	3.4K	4.2K	
45	FEO	28	3½"	78.5K	10.2K	5.8K	[illegible]		1.6K
46	FEAS	2	2"	19.4K	2.5K				
47	REAS	2	2"	18.8K	2.5K				
48	REO	28	3"	63.4K	8.2K	7.1K	6.8K		0.2K
49	CPRW	28	3"	55.7K	7.2K	1.3K	1.2K		
50	PSOA	4	2½"	39.5K					
51	ED	2	1¼"	8.8K					
52	FSW	34	3"	66.7K	8.7K				
53	↓	8	2½"	33.4K	4.4K				
54	PCPSW	8	2"	22.1K	2.8K				
55	HCPSW	14	3"	67.8K	7.9K				
56	↓	4	2½"	33.9K	4.0K				
57	FPC	16	2½"	29.7K	3.9K	9.1K	1.6K	7.4K	
58	RPC	16	2½"	29.7K	3.9K	9.1K	1.6K	7.4K	
59	RIHS	1	1½"	10.5K					
60	FR	2	1"	1.2K	0.15K	4.2K	0.7K		1.0K
61	FP	2	1"	1.4K	0.2K	3.0K	[illegible]		2.8K
62	RP	2	1"	1.2K	0.15K	1.8K	[illegible]		3.0K
63	ROOF SUPPT'S	10	1½"	4K	0.5K	6.8K	1.2K		[illegible]
64	RIHS	1	1½"	27.3K					
65	PSOA	2	1½"	24K					
66	ASL	2	1"	1.3K					
67	ASL	1	1"	1.6K					
68	SSHAM (FUTURE)	1	1¾"	9.0K					
69	↓	1	1⅛"	7.8K	1.7K			0.2K	
70	↓	1	1"	5.8K	0.2K				0.9K
71	↓	1	1"	3.3K	0.5K			0.3K	
72	↓	1	1"	5.2K	0.5K				0.1K
73	↓	1	1"	4.0K	0.4K			0.1K	
74	RHSAM	1	1¼"	5.2K					
75	↓	1	1"	3.1K	0.7K			0.1K	
76	↓	1	1"	3.8K	0.5K				1.2K
77	↓	1	1"	3.0K	0.4K			0.1K	
78	↓	1	1"	3.0K	0.3K				0.1K
79	↓	1	¾"	1.9K	0.3K			0.1K	

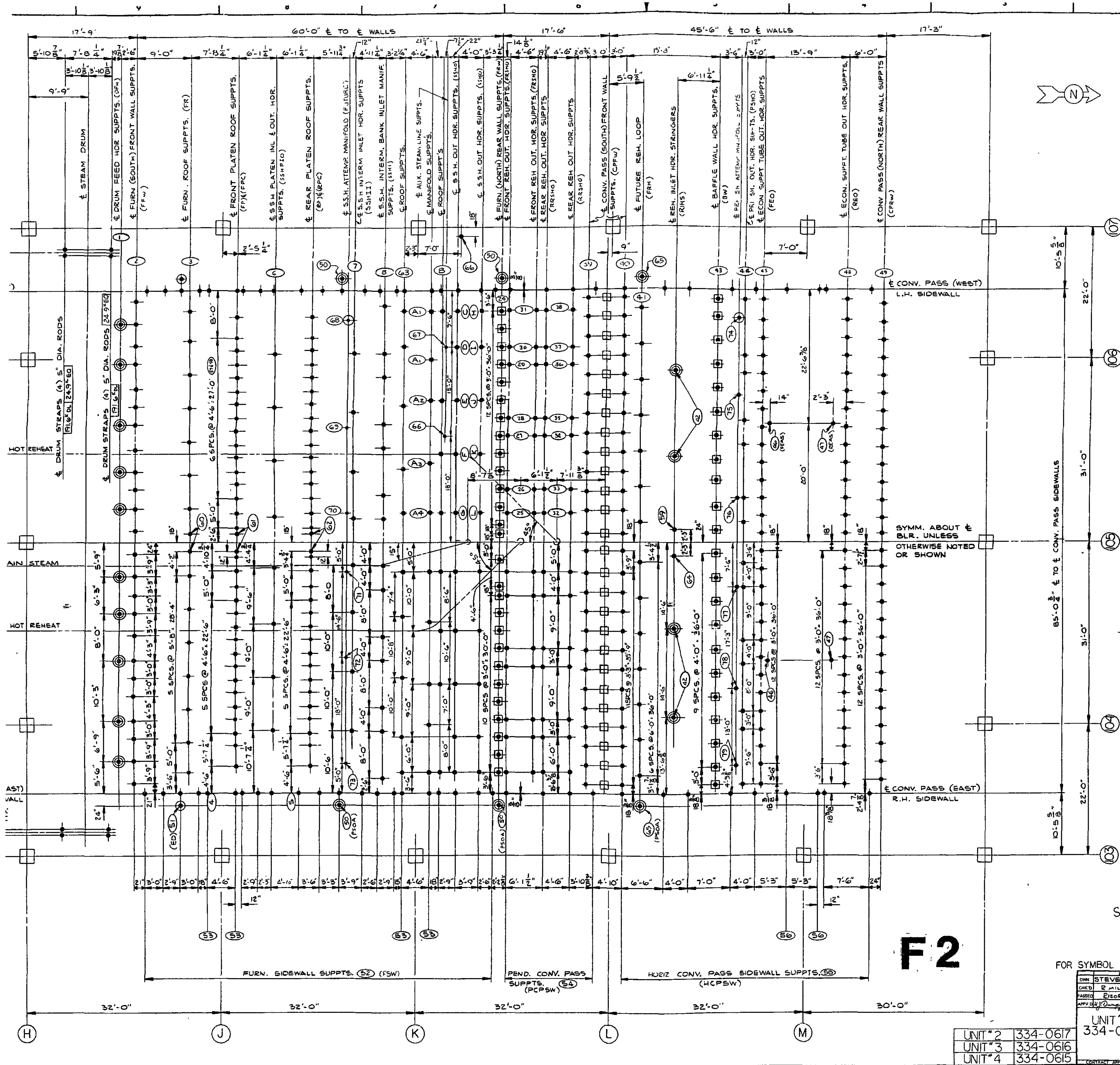
F1

7537 J | 6

B&V 9255 62 · 3401 05 10501

DWG NO 7537 J

IP7_036237



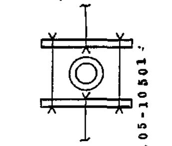
F2

Revisions

REV NO	DESCRIPTION	DATE	APPROVAL	IMF
1	CHG'D. QTY OF FF & RP FROM 15 TO 16 ... ADDED ... ADDED ROD DIAMETERS MOVED RODS ON FF, FP, RP & FRW TO STRADDLE COL. 105. MOVED REH INLET HDR STRINGERS FROM 5'-5¼ TO 6'-11¼ FROM BAFFLE WALL TO SUIT CPSW SPLIT. RELOCATED FURN S.W SUPPT ROD ..., ZONE C-8, TO CLEAR PRIM TO SEL. PIPES. RELOCATED FURN REAR WALL RODS, ZONE E/F-7, TO CLEAR REH. OUT PIPES & GIRDER ON 105 ROW. CHG'D LOADS FOR TAG NO'S (39), (43), (44) & (45) PER CORR DATED 9-15-81 ADDED NOTES 5 & 6 ADDED CUST PROJECT NO ABOVE TITLE BLOCK. ADDED TAG NO'S (60), (61) & (62) AND LOADS FOR EACH. CHG'D QTY. FOR (3), (4), (5). KES/	9/81		✱
2	CHG'D ROD LOCATIONS ON CPFW. ADDED 24' DIMENSION FOR ECON. DISCH. CHG'D ROD LOCATIONS ON RIHS FROM 21'-6 TO 21-3 FROM ℄ BLR ADDED NOTE 7 ADDED DWG NUMBER TO NOTE 6. KES/			✱
3	ADDED RODS (46) & (47) ON EAST SIDE OF BOILER. CHG'D. EQ & DEAD LOADS FOR (6) (41) (43) (44) (45) (50) & (51). CHG'D. DEAD LOAD FOR (1). CHG'D ROD DIAM. FOR (21) & (22). CHG'D LOADS PER STRESS ANAL. FOR (25) THRU (38), & (42) & (59). CHG'D NO. OF SUPT. RODS FOR RIHS FROM 3 TO 5. CHG'D NO OF RODS FOR PSHO FROM 12 TO 14. CHG'D LOADS FOR (44). CHG'D DIM FOR (24) FROM 15" TO 18". ADDED SYMBOL LOC. (RIHS) FOR REH INLET HDR STRINGERS / RJS/ HETRICK/	3/17/82		✱
4	DELETED FRONT SSH OUT HDR SUPPTS / ADDED ROOF & MANIFOLD SUPPTS @ 2'-3" & 4'-0¼" NORTH OF COL. ROW 'K'. RELOCATED MAIN STEAM LINE FROM 8'-0" TO 4'-0" FROM ℄ BOILER / DELETED OTHER MAIN STEAM OFF THE FRONT SSH OUT HDR. REV. SIZES, LOADS, / TAG NO'S. FOR RSSHO / REV. SIZES & LOADS FOR FRSHO & RRSHO. ADDED SIZES, LOADS, & TAG NO'S. FOR THE MANIFOLD & ROOF SUPPTS HAZI/ K Miller	6/11/82		✱
5	ADDED ROOF SUPPTS. 2'-3" SOUTH OF COL. ROW 'K' / ADDED CORRESPONDING INFORMATION TO TABLE. REVISED DIMENSIONS ON ECON SUPP'T TUBE OUT. HDR. SUPP'TS NORTH OF COL. ROW 'M'. REVISED LOADS FOR SUPP'TS. A2, A4, & 43 PER STRESS LETTERS DATED 6/30/82 AND 7/1/82. REVISED LOADS FOR THE SSH AND BOTH RSH OUTLET HDRS. PER STRESS ANALYSIS LETTER DATED 8/2/82 HAZI/	8/3/82		✱
6	ADDED SUPPTS. FOR SSH ATTEMP MANIFOLD (FUTURE) 68 THRU 73, AUX STEAM LINE 66 & 67 AND REH SH ATTEMP MANIFOLD 74 THRU 79. CHG'D THE RIHS SUPPT. 59 ON THE RIGHT SIDE TO 64 AND REV TABLE. CHG'D SUPPT PSOA 50 5'-0½" NORTH OF COL ROW L TO 65 AND REV TABLE. CHG'S TO SUPPT TABLE - CHG'D SUPPT 42 ROD SIZE FROM 2" TO 2½", LOAD FROM 34.5K TO 37.8K AND DELETED EQ LOAD. CHG'D SUPPT 50 QTY FROM 6 TO 4 AND DELETED EQ LOAD. CHG'D SUPPT 53 QTY FROM 2 TO 1, LOAD FROM 17.3K TO 10.5K AND DELETED EQ LOAD. CHG'D DEAD LOADS FOR SUPPTS C THRU L, 25 THRU 38 AND CHANGED ROD DIAMETERS FROM 3" TO 3½" FOR SUPPTS E AND F / M.DAVIS/L.G KRIBS	1/3/83		✱
7	ADDED AUX STEAM LINE SPRT #66 7'-0" NORTH OF K ROW & 18" EAST OF 107 ROW. INCREASED THE #66 SPRT QUAN FROM 1 TO 2 & THE LOAD FOR SPRT #1 FROM 5.1K TO 5.8K. DELETED EQ LOADS FOR SPRTS #1 & #51. ADDED CONSTANT LOAD HANGER DESIGNATIONS TO SPRTS #1, #42, #50 & #65, PLUS, VARIABLE SPRING HANGER DESIGN FOR SPRTS #51, #68 & #74. ROHNER/	2/9/83		✱

NOTES:

1. THERMAL FLEXIBILITY LOADS ARE OPERATIONAL LOADS. THEY ACT ONLY DURING OPERATION.
2. VERTICAL EARTHQUAKE LOADS ARE BASED ON A FACTOR OF 0.13 TIMES THE DEAD WEIGHT.
3. PRESSURE LOADS AND TRANSIENT PRESSURE LOADS CAN ACT UP OR DOWN.
4. RODS IN VICINITY OF MAIN STEAM AND HOT REHEAT PIPES PARALLEL TO BLR ℄ AS SHOWN: (ALSO REFER TO NOTE 6)



5. FOR S.H. BY-PASS SUPPORT SEE DWG 8501J.
6. FOR "TRAPEZE" COLLECTOR SUPPORT ARRGT. SEE DWG. 8508 J.
7. FIRST DIGIT OF COLUMN ROW DESIGNATION CORRESPONDS TO UNIT NUMBER. EXAMPLE:

UNIT 1 (101) UNIT 2 (201) UNIT 3 (301) UNIT 4 (401)

B&V 9255.62.3401.05-10501

MECH FILE COPY

INTERMOUNTAIN POWER PROJECT
STEAM GENERATOR UNITS 1,2,3,& 4
PROJECT FILE 9255.62/3401
IPA CONTRACT 2010N

NO EXCEPTIONS NOTED / EXCEPTIONS NOTED REVISE & RESUBMIT FOR DISTRIBUTION / RETURNED FOR CORRECTION
JUN 01 1983
BLACK & VEATCH

FOR SYMBOL NOMENCLATURE & NOTES SEE DWG 7536 J

DWN	STEVENSON
CHK'D	R MILLER
PASSED	RIZOR
APPV'D	7/26/81

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B&W RADIANT BOILER
LOADING DIAGRAM

B&V 9255.62.3401.05-10501

UNIT #1	334-0614
UNIT #2	334-0617
UNIT #3	334-0616
UNIT #4	334-0615

CONTRACT APPLICABLE

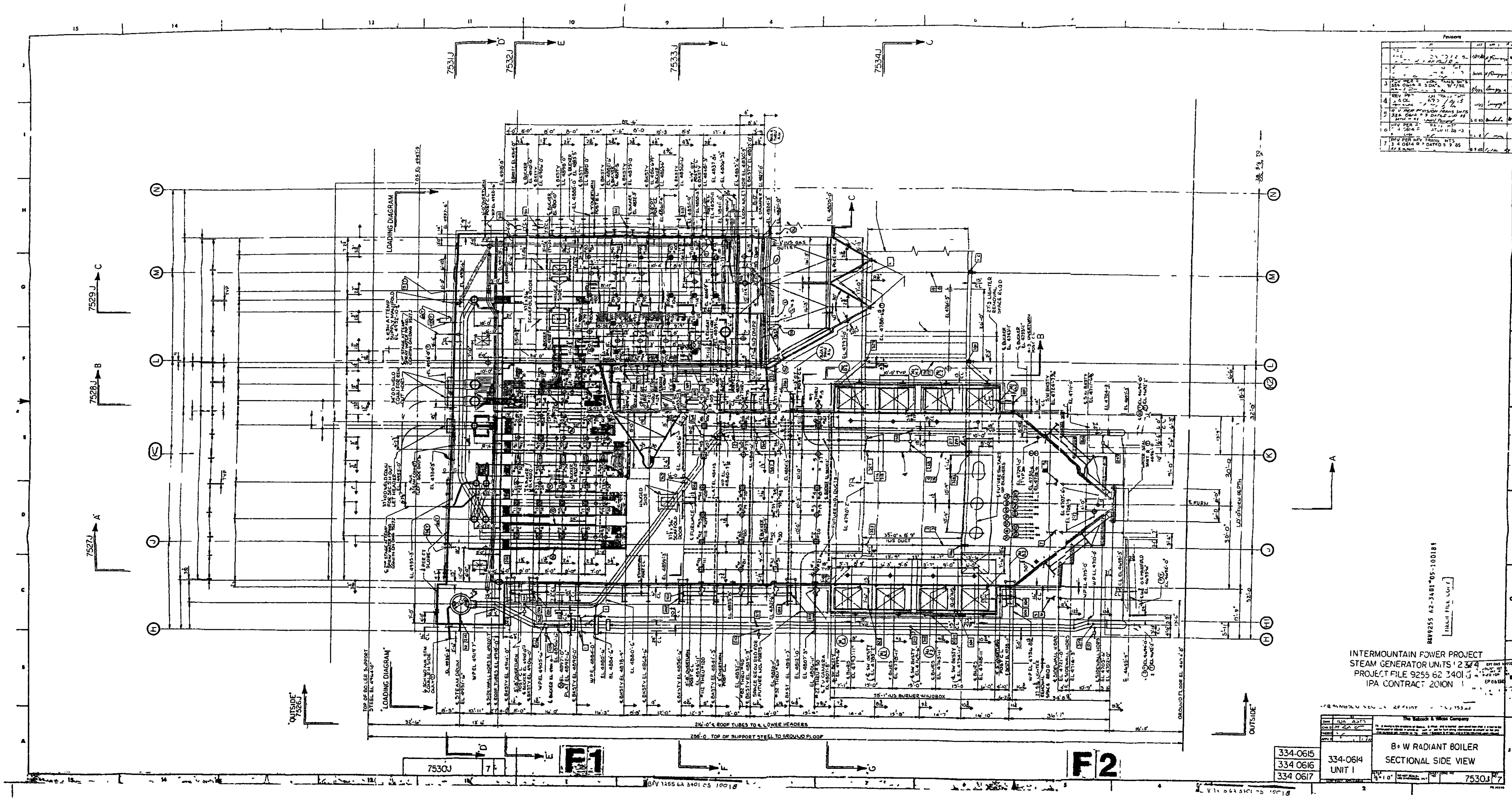
SCALE 3/16" = 1'-0" DO NOT SCALE - USE DIMENSIONS ONLY SHEET NO DWG NO 7537J REV NO 7

PG 30288

DWG NO 1321

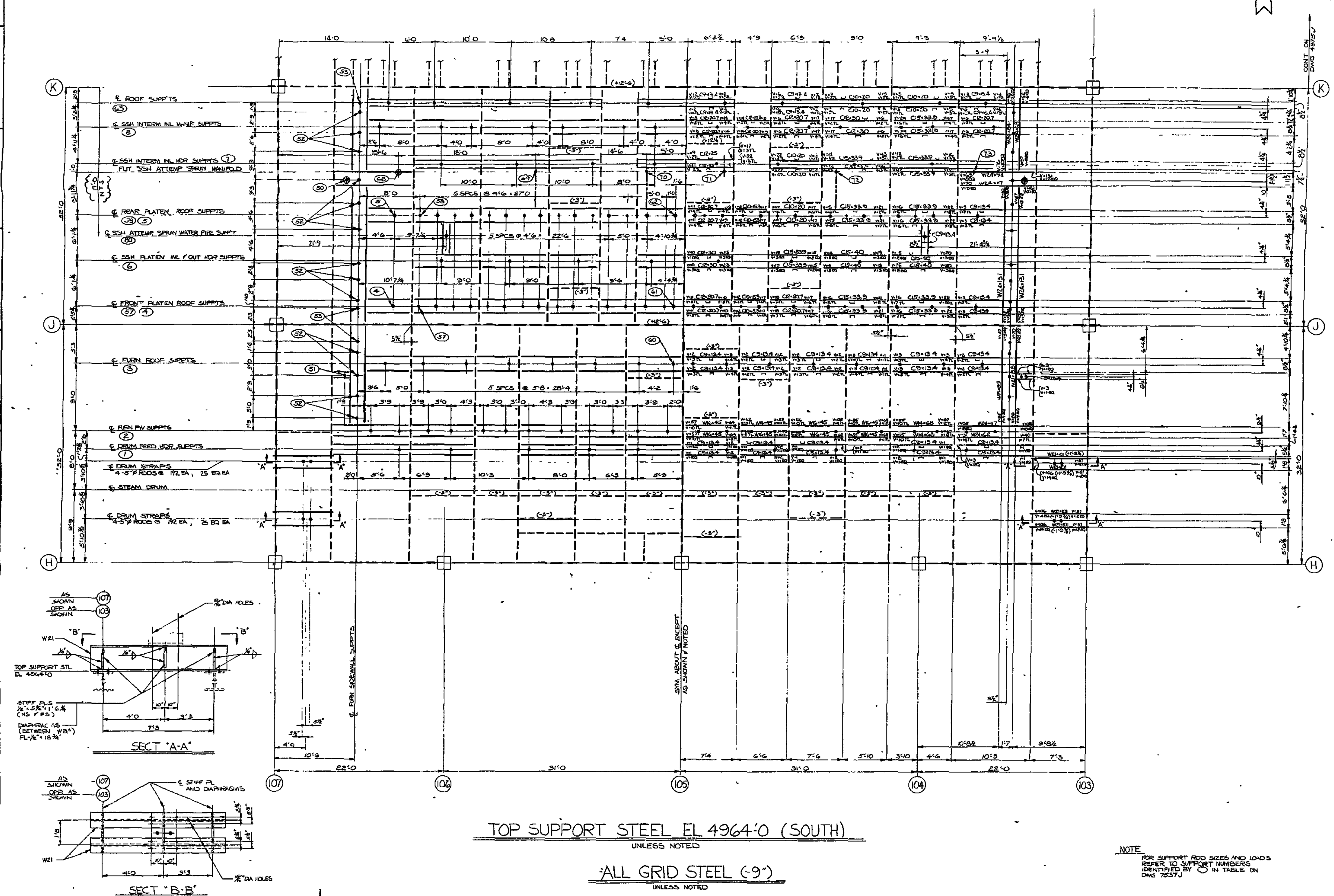
IP7_036238

B&V 9255 62 3401 05 10501


INTERMOUNTAIN POWER PROJECT
STEAM GENERATOR UNITS 1 2 3 & 4
PROJECT FILE 9255 62 3401
IPA CONTRACT 20ION
B&W9255 62-3401*05-100181
The Babcock & Wilcox Company
B+W RADIANT BOILER
SECTIONAL SIDE VIEW
334-0614
UNIT 1
334-0615
334 0616
334 0617
7530J
334 0614
52301
LOADING DIAGRAM
OUTSIDE
F1
F2

IP7_036239

REV NO.	DESCRIPTION	DATE	APPROVAL
1	REVISED SIZES & LOADS WHERE CIRCLED AND REVISED PER CUST COMMENT. MK/RAH	1/8/82	RBD
2	REVISED SIZES (LOADS AND DIMENSIONS WHERE CIRCLED PER CUST COMMENTS. TB/RAH	2/6/82	RBD
3	REMOVED SUPPT STEEL FOR SSH HEADER RODS & ADDED SUPPT STEEL FOR SSH ATTEMP. SPRAY WATER & ADDED CUST STEEL. ADDED RODS & STEEL AND REVISED REACTIONS FOR FUT SSH SPRAY MANIFOLD. DBH/DPH	6/18/82	RBD
4	ADDED ROOF SUPPTS & STEEL RV LOADS & FUT. STEEL ARRANGEMENT DPH/DPH	8/5/82	RBD
5	REV PER CUST COMMENT TO ADD (3)(-3") ELEV OF CUST STL. ADDED CUST STL AND REV DIMENSION WHERE CIRCLED MK/DPH	10/18/82	RBD
6	ADDED VAR. & CONSTANT SUPPORT TYPES TO GEN. NOTES. CORRECTED SUPPT NO. 80 TO CONSTANT + 6 & 8 TO VAR. ADDED SUPPT NOS 68 TO 73 & 80, REV LOC OF SUPPT NO. 63 TO 7'-4 & 10'-8, WAS 7'-6 & 10'-6 RESPECTIVELY. REV PER CUST COMMENTS. CAC/RCH	1/7/83	RBD
7	RELOCATED FUT. BEAM EAST OF COL ROW 105, CHGD CUST BEAM FROM -3" TO +12¼" & REMOVED SUPPT ON COL. ROW 107 PER CUST. COMMENT. AN/RAH	3/4/83	RBD
8	REVISED SUPP'T NO. 80 LOC FROM 20'-0 TO 19'-0. DB/DPH	2/23/84	RBD



TOP SUPPORT STEEL EL 4964'-0 (SOUTH)
UNLESS NOTED

ALL GRID STEEL (-9")
UNLESS NOTED

NOTE
FOR SUPPORT ROD SIZES AND LOADS REFER TO SUPPORT NUMBERS IDENTIFIED BY ◯ IN TABLE ON DWG 7537J

4974J

GENERAL NOTES

1. MATERIAL

THE FOLLOWING STEEL TO CONFORM TO ASTM MATERIAL SPECIFICATION:
A-36 FOR ALL ROLLED SHAPES, (AND STIFFENER PLATES UNLESS NOTED.
A-325 FOR CONNECTION BOLTS UNLESS NOTED
A-2530 FOR ALL SUPPORT ROD BEARING PLATES.
A-569 FOR 10 & 16 GA. FILL PLATE
A-2530 FOR 3/16 INCH THRU 3/8 INCH THICK FILL PLATE

2. CODES

STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING AISC (SEVENTH EDITION) FOR CONNECTIONS AND (EIGHTH EDITION) FOR STEEL SPECIFICATIONS AND CODES.
AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
AISC CODE OF STANDARD PRACTICE.
SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A-325 OR A-490 BOLTS.

ALLOWABLE STRESS RATIOS:	GRAVITY LOADS (GL)	GL + NON-GL
MEMBERS	1.0	1.0
CONNECTIONS	1.0	1.0

3. CONNECTIONS

SHOP CONNECTIONS TO BE WELDED.
ALL WELDS TO BE E70XX ELECTRODES.
ALL FIELD CONNECTIONS SHALL BE MADE WITH 1" MINIMUM DIAMETER [illegible] TYPE BOLTS, WITH THREADS INCLUDED IN THE SHEAR PLANES.
WHERE NO END REACTIONS ARE SHOWN FOR HORIZONTAL BEAMS, THE END CONNECTIONS SHOULD BE DESIGNED & DETAILED USING MINIMUM REQUIREMENTS PER AISC CODE.
UNLESS OTHERWISE NOTED, FORCES AT CONNECTIONS ARE DESIGNATED AS FOLLOWS:
"A" – MAX. AXIAL FORCE (KIPS) THROUGH A CONNECTION DUE TO WIND, EARTHQUAKE OR STABILIZATION LOADS. CONNECTIONS WITH "A" FORCE ARE TO BE DESIGNED FOR BOTH AXIAL TENSION AND COMPRESSION.
"V" – MAX. VERTICAL SHEAR FORCE (KIPS) ON A CONNECTION DUE TO DEAD AND LIVE LOAD
"H" – MAX. HORIZONTAL-SHEAR FORCE (KIPS) ON A CONNECTION DUE TO WIND, EARTHQUAKE OR STABILIZATION LOADS.
"M" – MAX. MOMENT (INCH KIPS) ON A CONNECTION.
"T" – MAX. TORSIONAL MOMENT (INCH KIPS) ON A CONNECTION
ALL ATTACHMENTS TO STRUCTURAL STEEL MEMBERS SHALL BE CHECKED LOCALLY FOR STRENGTH AND STABILITY AND STIFFENER PLATES ADDED WHERE NECESSARY BY DETAILERS.

4. GENERAL

ALL BEAMS AND CHANNELS USED IN PAIRS SHALL HAVE DIAPHRAGMS AT INTERVALS NOT TO EXCEED 8'-0".
(-D) INDICATES DISTANCE (D IN INCHES) FROM ELEVATION INDICATED ON PLAN VIEWS TO TOP FLANGE OF BEAMS OR CENTERLINE OF GUSSETS FOR ANGLES.
ALL LOADS SHOWN ARE IN KIPS.

5. LEGEND

B&W STEEL
STEEL BY OTHERS
FUTURE STEEL
CONTINUED STEEL
SUPPORT RODS INDICATED THUS:
SOLID ●
UNION SPRING ⊠
VARIABLE ◉
CONSTANT LOAD ◎

B&V9255 62.3401.05-10503

MECH FILE COPY

NO EXCEPTIONS NOTED
EXCEPTIONS NOTED
RETURNED FOR CORRECTION
APR 2 1984
BLACK & VEATCH

INTERMOUNTAIN POWER PROJECT
STEAM GENERATORS UNITS 1 THRU 4
PROJECT FILE 9255.62.3401
IPA CONTRACT 2010 N

The Babcock & Wilcox Company
Power Generation Group

DWN	M A KIMMEL
CHKD	R A HEATH
PASSED	R.B. Dec[illegible]
APP'D	[illegible]

334-0614-78
334-0615-78
334-0616-78
334-0617-78

BOILER STRUCTURAL STEEL
PLAN VIEW
TOP SUPPORT STEEL
EL 4964'-0 (SOUTH)

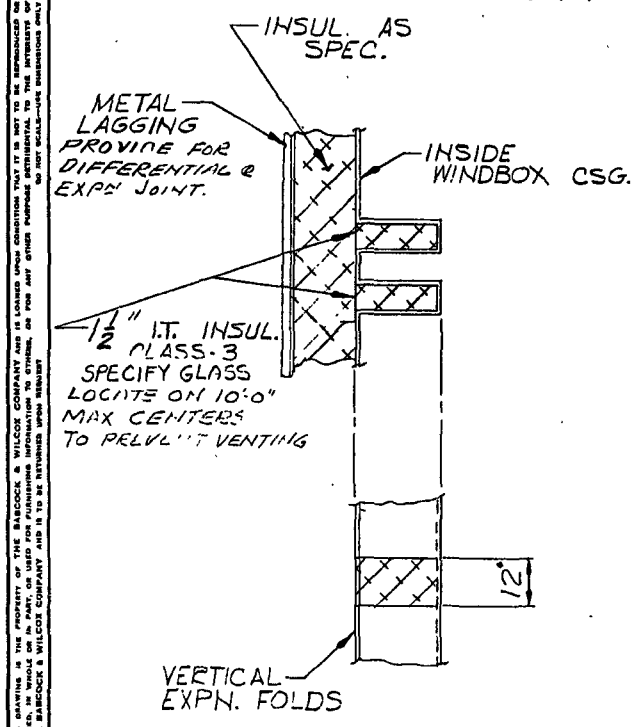
SCALE ¼"=1'-0 | DO NOT SCALE - USE DIMENSIONS ONLY | DWG. NO. 4974J | REV 8

B&V9255.62.3401.05-10503

IP7_036240

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

REVISIONS				MICRO-FILM
BAWH NO.	DATE	DESCRIPTION		ORIG.
1	9/30/74	STAGGERED GLASS JOINT		
		INSUL. BOXED NOT. F.S.E.		
		LAGGING EXPN & JOINTS		



SECTION 50AD

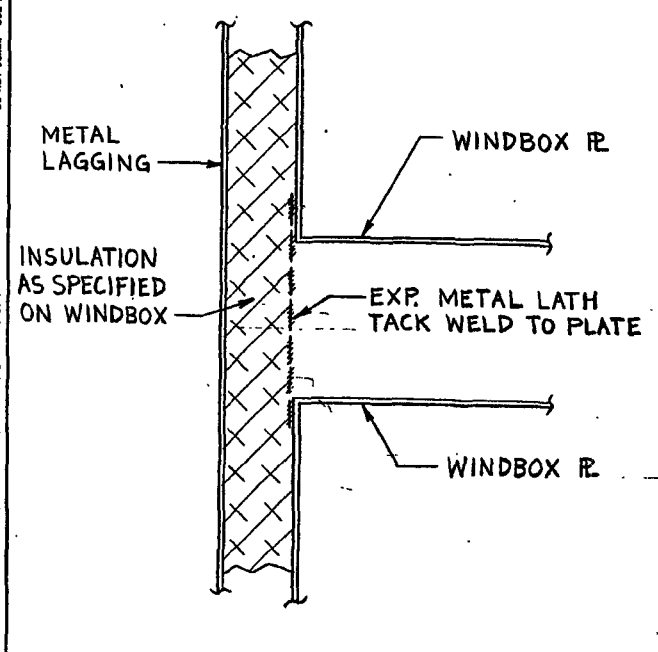
DWN. BY PLS	CHK'D MIKITA	INSULATION DETAIL	SCALE N.T.S.	DATE 9/30/74
PASSED BY HATFIELD	APP'D FERLH		DRWG NO. 113138 A-1	

BRUNING 17991

THE BABCOCK & WILCOX COMPANY
POWER GENERATION DIVISION (FPG)

WINDBOX

REVISIONS				MICRO-FILM
BAWH NO.	DATE	DESCRIPTION		ORIG.
1	10/4/74	REV'D LATH	BAF	



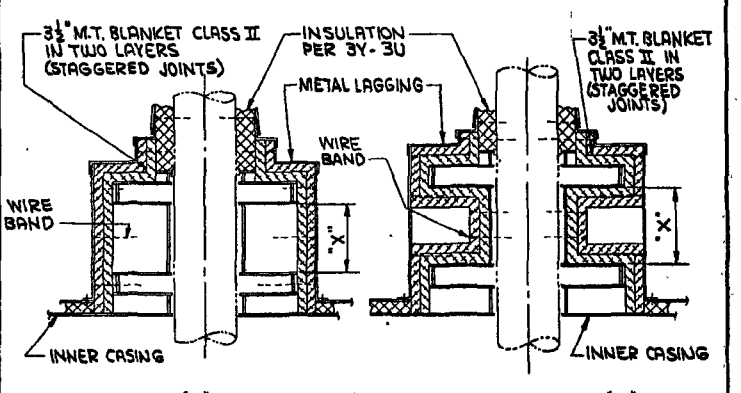
SECTION 50AG

DWN BY TJS	CHK'D RWS	INSULATION DETAILS	SCALE ~	DATE 2-8-74
PASSED BY ARM	APP'D LEM		DRWG NO. 114850 A-1	

THE BABCOCK & WILCOX COMPANY
POWER GENERATION DIVISION

ECONOMIZER
PAGODAS

REVISIONS				MICRO-FILM
BAWH NO.	DATE	DESCRIPTION		ORIG.
2	9/11/74	REV INSULATION APPLICATION		
		ADDENDUM		
3	9/11/74	CHG'D CLASS I TO CLASS II		
	9/11/74	REV'D NOTE	BAF	



FOR SEALS WHERE "X" IS LESS THAN 12"

FOR SEALS WHERE "X" IS GREATER THAN 12"

FOR PIPE TEMPERATURES BELOW 875° F

SECTION 56R

DWN BY WLH	CHK'D BLG	INSULATION DETAILS	SCALE	DATE
PASSED BY WEH	APP'D HWB/O		DRWG NO. 52622 A-3	

LOCKED DRAWER DRAWING

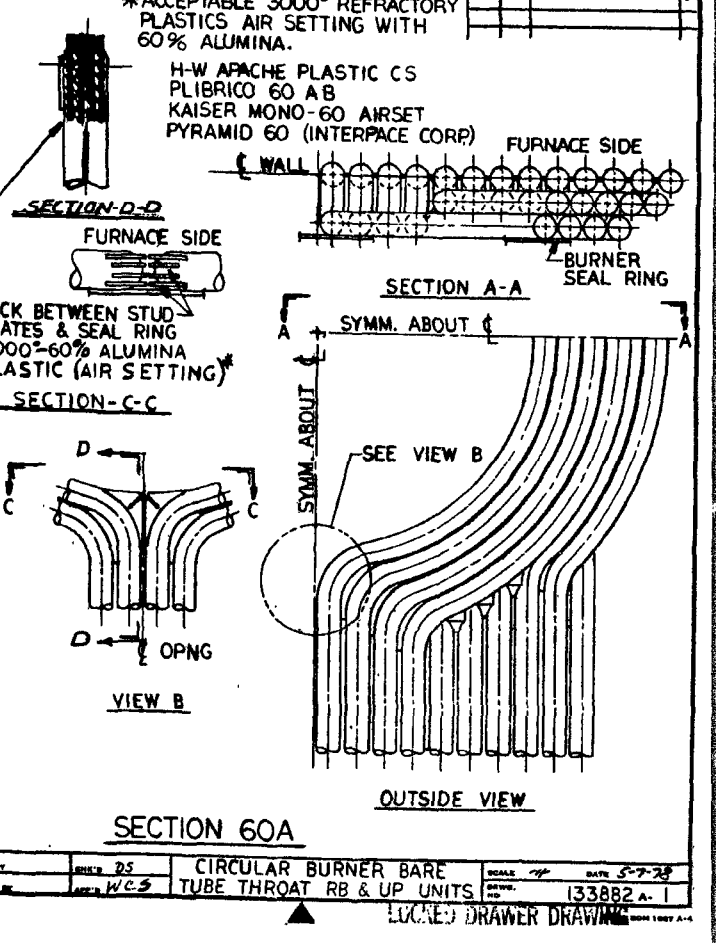
THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

BRICKWORK & REFRACTORY
BURNERS

REVISIONS				MICRO-FILM
BAWH NO.	DATE	DESCRIPTION		ORIG.
1	10/1/74	REVISED P&A TO LATH MATERIAL		

*ACCEPTABLE 3000° REFRACTORY PLASTICS AIR SETTING WITH 60% ALUMINA.

H-W APACHE PLASTIC CS
PLIBRICO 60 A B
KAISER MONO-60 AIRSET
PYRAMID 60 (INTERPACE CORP.)



SECTION 60A

DWN BY	CHK'D DS	CIRCULAR BURNER BARE TUBE THROAT RB & UP UNITS	SCALE 3/4"	DATE 5-7-75
	APP'D WCS		DRWG NO. 133882 A-1	

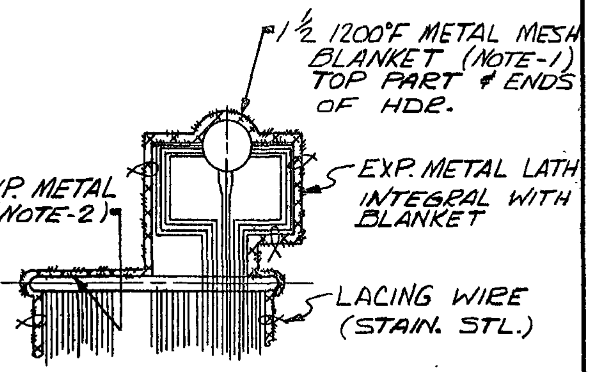
LOCKED DRAWER DRAWING

BY 1255, 62, 3HA 06-10264

IP7_036241

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.
1	2/7/78	UPDATED DWG & REV. NOTE-2 dP Karolyi	



SECTION 387

FOR HEADERS AND TUBE LEGS WITH DESIGN TEMPERATURES ABOVE 875°F

NOTE:

1. PENDANT TUBE LEGS SHALL BE GROUP INSULATED FROM THE FURNACE ROOF SEAL UP TO AND INCLUDING THE HEADERS WITH MINERAL FIBER BLANKET. BLANKETS INCLUDE ½" x 1" MESH 24 GAGE 18-8 STAINLESS EXPANDED METAL LATH ON TUBE SIDE AND 1-½" MESH 18 GAGE CARBON STEEL EXPANDED METAL LATH ON OUTSIDE. EDGES SHALL BE SCURED AGAINST FRAYING BY 18-8 STAINLESS (SOFT) TIE WIRES LOCATED NO MORE THAN 4" FROM BLANKET EDGES AND ON A MAXIMUM OF 12" CENTERS BETWEEN ANY TIES, IN BOTH DIRECTIONS, AT A REASONABLE EQUAL SPACING.
2. WHEN TUBE SPACING IS 4" OR OVER, USE EXPANDED METAL LATH FOR ADDITIONAL SUPPORT ON TOP SURFACES ONLY. CARBON STEEL TO 900°F USE ALLOY STEEL ABOVE 900°F

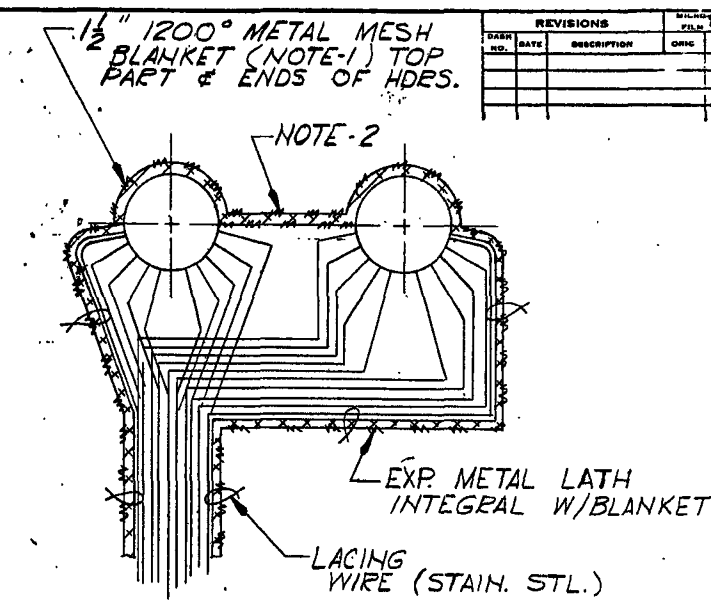
K&E NO. 10-7188

DWN. BY PLIS	CHK'D MIKITA	INSULATION DETAIL	SCALE NTS DATE 8/30/73
PASSED BY HATFIELD	APP'D GER/H		DRWG. NO. 113139 A-1

FORM BSM 1007 A-4

THE BABCOCK & WILCOX COMPANY
POWER GENERATION DIVISION

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.



FOR HEADERS, TUBES, & PIPES WITH DESIGN TEMPERATURES ABOVE 875° F.

NOTES:

1. PENDANT TUBE LEGS SHALL BE GROUP INSULATED FROM THE FURNACE FRONT WALL SEAL OUT TO AND INCLUDING THE HEADERS WITH MINERAL FIBER BLANKET. BLANKETS INCLUDE 1/2" x 1" MESH 24 GAGE 18-8 STAINLESS EXPANDED METAL LATH ON TUBE SIDE AND 1-1/2" MESH 18 GAGE CARBON STEEL EXPANDED METAL LATH ON OUTSIDE. EDGES SHALL BE SECURED AGAINST FRAYING BY 18-8 STAINLESS (SOFT) TIE WIRES LOCATED ABOUT 1" FROM EDGES ON 4" CENTERS. OPPOSITE SIDES OF THE BLANKET SHALL BE HELD TOGETHER WITH 18-8 STAINLESS TIE WIRES ON 6" CNETERS MAXIMUM IN BOTH DIRECTIONS. EDGES OF ADJACENT BLANKETS SHALL BE DOUBLE LACED OR CLIPPED TOGETHER WITH #14 GAGE ANNEALED IRON TIE WIRES ON 6" CENTERS.
2. WHEN TUBE SPACING IS 4" OR OVER USE EXPANDED METAL LATH FOR ADDITIONAL SUPPORT ON TOP SURFACES ONLY. CARBON STEEL TO 1000F, USE ALLOY STEEL ABOVE 1000F.

SECTION 388

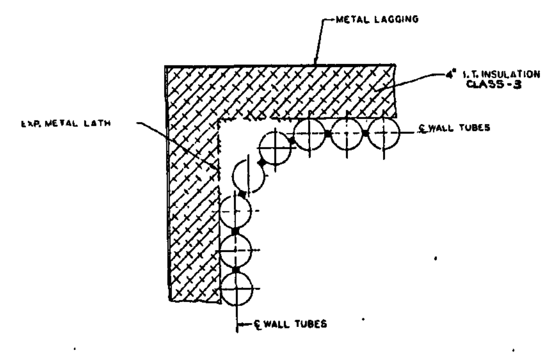
DWN. BY PLIS	CHK'D MIKITA	INSULATION DETAIL	SCALE NTS DATE 8/3./73
PASSED BY HATFIELD	APP'D GER/H		DRWG. NO. 113140 A-0

FORM BSM 1007 A-3

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION
INSULATION
DESIGN

BOILER & FURNACE WALLS
WELDED MEMBRANE

REVISIONS		MICRO-FILM
DASH	DESCRIPTION	ORIG.
1	REVISED 9/12/63 PAC	
2	CHG'D EXP METAL LATH FROM (?) TO (?) 3-16-64 PPF/LWF	
3	REVISED 8-7-67 SE	
4	CHG'D TYPE II INSUL TO CLASS-3 3-24-72 BBF/LWF	



SECTION - 40N

B&W 9255.62.3401.06-10264

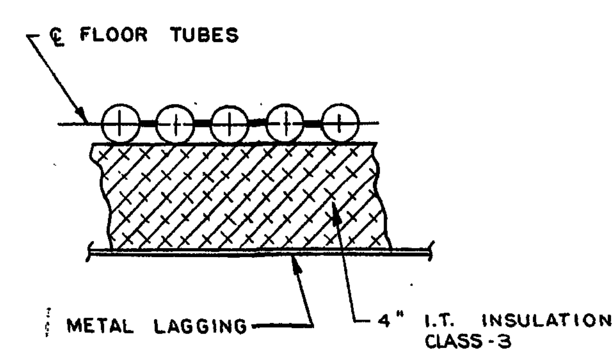
PREFERRED STANDARD
LOCKED DRAWER DRAWING

DWN BY SCHELL	CHK'D WATHEN	INSULATION DETAILS	SCALE N.T.S. INCHES = 1 FOOT
DATE 12-23-60	APP'D ORR		36191 A-4

LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION
MEMBRANE WALLS
SUPERHEATER FLOOR
METAL LAGGING FINISH

REVISIONS			MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.
1	8/4/67	REVISED SE	
2	3/27/72	CHG'D TYPE II INSUL TO CLASS-3 BBF/LWF	



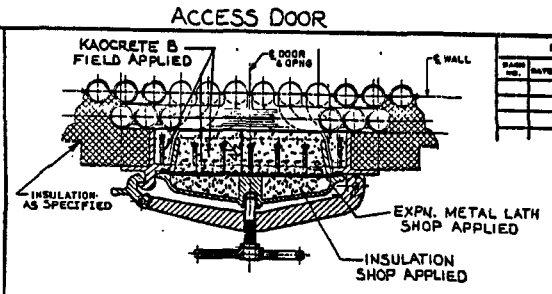
SECTION - 40AE

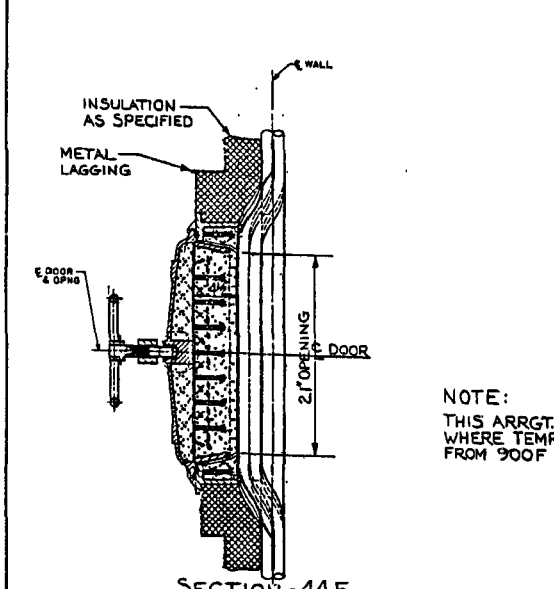
DWN. BY TJS	CHK'D RWS	INSULATION DETAILS	SCALE NTS DATE
PASSED BY WEH	APP'D LGM		DRWG. NO. 66289 A-2

FORM BSM 1007 A-1

THE BABCOCK & WILCOX COMPANY (UPGD)

ACCESS DOOR





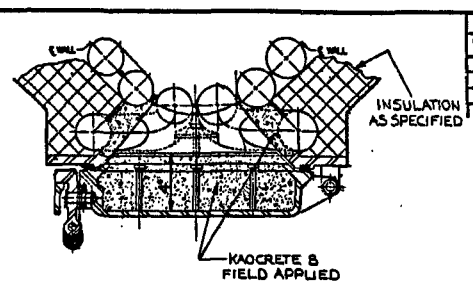
NOTE:
THIS ARRGT. IS FOR ZONES WHERE TEMPERATURES ARE FROM 900F UP TO 2200 F.

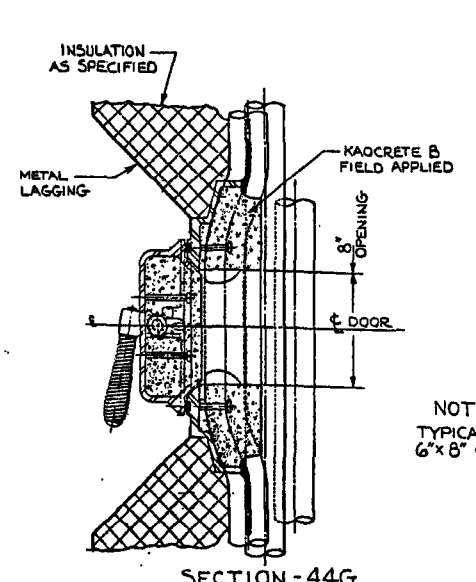
SECTION-44E

DWN BY RRM	CHK'D WCS	INSULATION DETAIL	SCALE	DATE 5-13-83
TRACED BY WCS	APP'D NRP		DRWG. NO.	146751 A-0

LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY (UPGD)





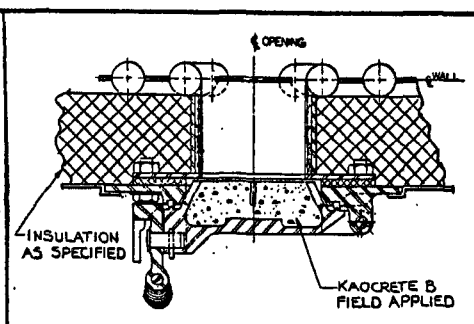
NOTE:
TYPICAL SECTIONS THRU 6"x 8" OPENING CORNER DOOR.

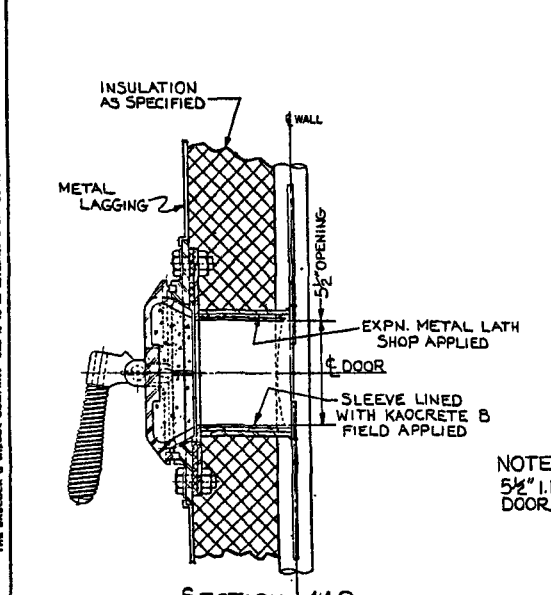
SECTION-44G

DWN BY RRM	CHK'D WCS	INSULATION DETAIL	SCALE	DATE 5-13-83
TRACED BY WCS	APP'D NRP		DRWG. NO.	146752 A-0

LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY (UPGD)





NOTE:
5½" I.D. OBSERVATION DOOR & SLEEVE ASSY.

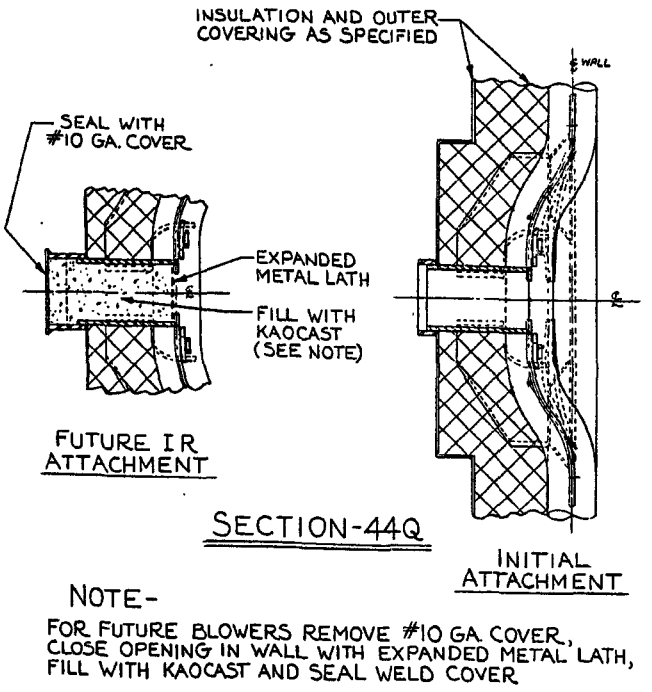
SECTION-44P

DWN BY RRM	CHK'D WCS	INSULATION DETAIL	SCALE	DATE 5-13-83
TRACED BY WCS	APP'D NRP		DRWG. NO.	146753 A-0

LOCKED DRAWER DRAWING

THE BABCOCK & WILCOX COMPANY

IR WALL SLEEVE ATTACHMENT



SECTION-44Q

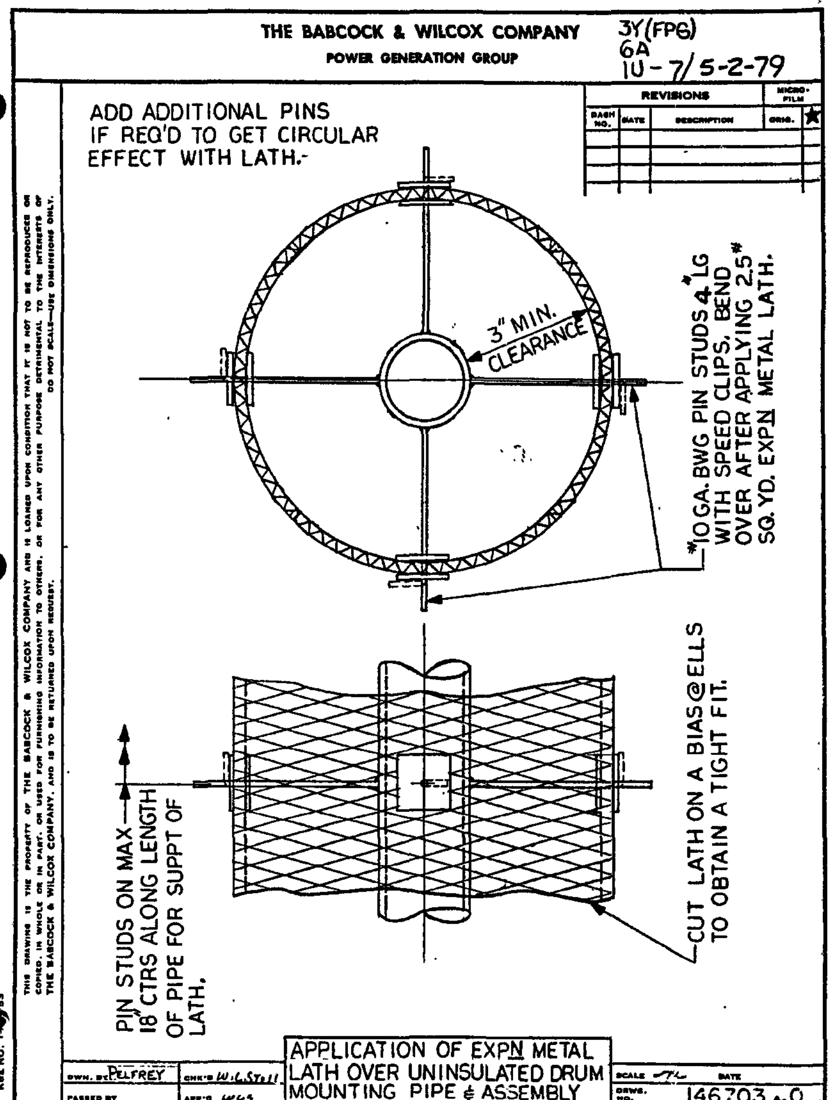
NOTE-
FOR FUTURE BLOWERS REMOVE #10 GA. COVER, CLOSE OPENING IN WALL WITH EXPANDED METAL LATH, FILL WITH KAOCAST AND SEAL WELD COVER

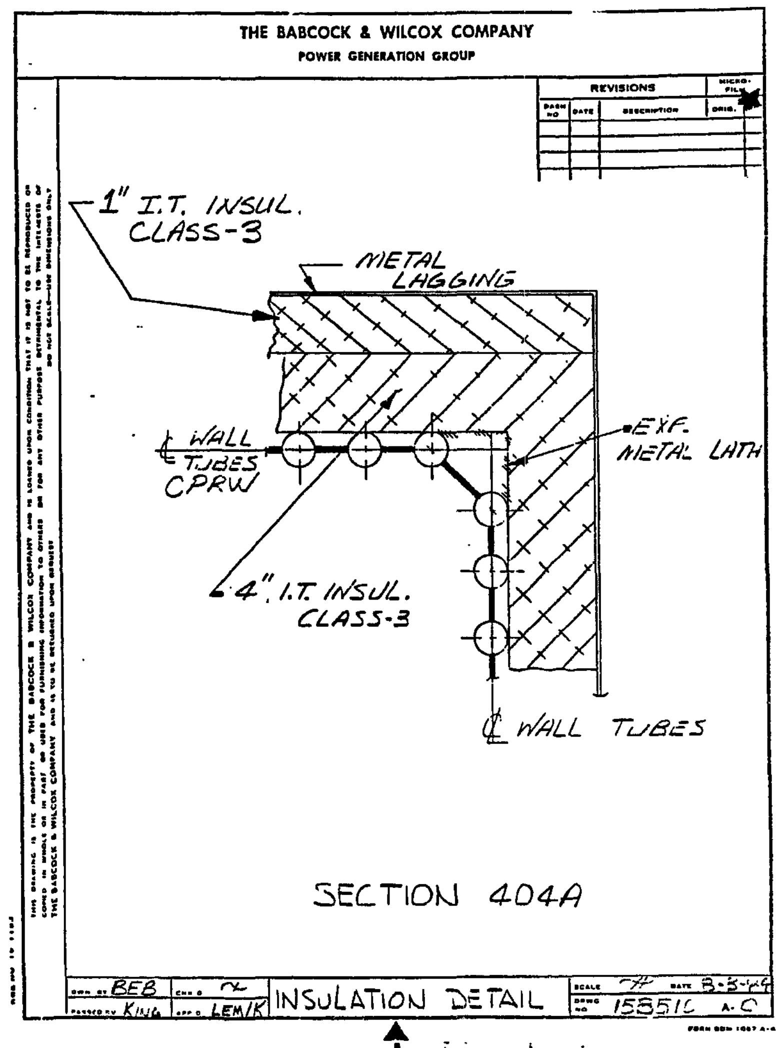
DWN BY R.MCINTEE	CHK'D WCS	INSULATION DETAIL	SCALE N.T.S.	DATE 6-6-83
TRACED BY WCS	APP'D NRP		DRWG. NO.	146754 A-0

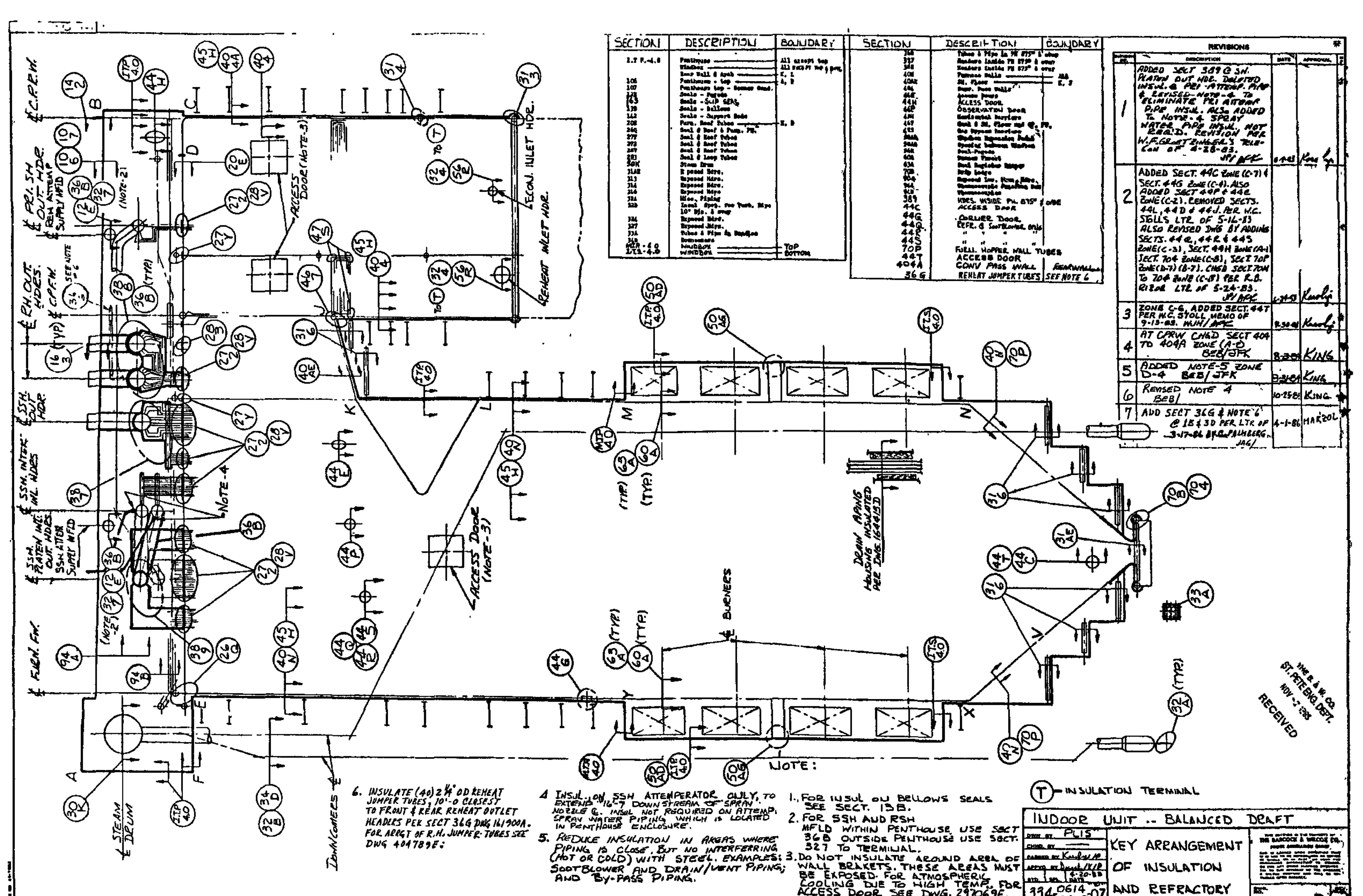
BW 92556, 62.3401, 06-10264

IP7_036243

B&V 9255.62.3401.06-10264







THE BABCOCK & WILCOX COMPANY
FOSSIL POWER GENERATION DIVISION

SPECIFICATIONS FOR INSULATION MATERIALS

MATERIALS (Cont'd)

13M Vendor is to list for each insulation item and part thereof, the square feet area of component involved and the extra per cent of quantity included for breakage in shipment, handling and erection.

14M Use of all types of medium temperature block approved by B&W Co. is permitted where medium temperature block is called for.

15M We require on the 15th and last of each month a report showing percentage of material shipped to the job site to date.

MATERIAL SPECIFICATIONS

16M All insulation materials must meet the specifications listed herein. All insulation materials must be asbestos free.

CLASS	TYPE	SPECIFICATIONS MATERIAL SPECIFICATIONS	SPECIFICATIONS TEMP. USE LIMIT - °F
BLOCK OR BLANKET		B&W APPROVED	
17M High-Temperature Block	Diatomaceous Earth	ASTM C-517 (Type 2)	1900
19M Medium Temp. Block	Calcium Silicate	ASTM C-533 (Type I)	1200
20M Medium Temp. Block	Expanded Perlite	ASTM C-610	1500
21M Medium Temp. Block	Mineral Fiber	ASTM C-612 (Class 5)	1200
23M Intermediate Temp. Block	Min. Fiber 8Lb/ft^3 NOM	ASTM C-612 (Class 3)	850
25M Blanket Insulation	Min. Fiber 8Lb/ft^3 NOM	ASTM C-592 (Class II)	1200
26M Blanket Insulation	B&W Kaowool		2300
PIPE INSULATION		B&W APPROVED	
27M Medium Temperature P/C	Expanded Perlite	ASTM C-610	1200
28M Medium Temperature P/C	Calcium Silicate	ASTM C-533 (Type I)	1200
*29M Medium Temperature P/C	Mineral Fiber (Preformed)	ASTM C-547 (Class 3)	1200
30Ma Low Temperature P/C	Glass Fiber	ASTM C-547 (Class 1)	450
30Mb Medium Temperature P/C	Mineral Fiber (Mat Faced) 12Lb/ft^3	ASTM C-592 (Class II)	1200
CEMENTS		B&W APPROVED	
31M High Temp. Plastic Insulating Cement	Mineral Fiber	ASTM C-195	1800
31Ma Medium Temp. Insulating and Finishing Cement	Mineral Fiber	ASTM C-449	1200

ASTM classes & specifications taken from ASTM Part 18, 1975.

* Maximum cold face use limit = 300°F. (Not to be used in enclosed insulated area)

SPECIFICATIONS FOR INSULATION MATERIALS

MATERIAL SPECIFICATIONS (Cont'd)

CLASS	TYPE	SPECIFICATIONS MATERIAL SPECIFICATIONS	SPECIFICATIONS TEMP. USE LIMIT - F
REINFORCEMENT			
32M Wire Mesh	1" x #19 ga. Hex. Mesh	Galvanized	
33M Metal Lath for Refractories	1-1/2" x #13 ga. Not Flattened.	Galvanized	500
		Japanned or Painted Finish	1000
34M Metal Lath for under support of insulation	1-1/2" x #13 ga. not Flattened	Galvanized	500
		Japanned or Painted Finish	900
35M Metal Lath for Outer Support of Insulation	2.5#/sq.yd.plasterer lath	Painted Black	
36M Metal Lath for High Temperature Use	1-1/2" x #13 ga. not Flattened - Stainless Steel	Any 300, 400 or 500 Alloy	1400
37M Metal Lath for High Temperature Use	1/2" x 16 ga. not Flattened - Stainless Steel	Any 300, 400 or 500 Alloy	
38M Lacing Wire	No. 14 ga. Wire	Annealed, Galvanized	500
		Annealed, Copper wash coated	800
39M Lacing Wire for High Temperatures	No. 14 ga. Wire Stainless Steel	Any 300, 400 or 500 Alloy-Annealed	1400
COVERINGS			
40M Glass Cloth for Seal Coats	Glass Fabric - Open Weave, 26 x 12 Lino Weave w/Syton Finish		550
41M deleted			
42M deleted			
43M deleted			
44M Mastic Coating	Emulsion or Cutback Type	B&W Approved Material	250
45M Mastic Coating	Synthetic Type	B&W Approved Material	250

46M Contractor shall list in detail the square foot quantities and size of all materials necessary to insulate each specific area designated on the various section drawings. This is necessary to enable us to evaluate the bids, and the applicator to install the material on the areas designated by the materials supplier.

47M All materials required for proper support and fastening of insulation to all surfaces shall be provided by the contractor. The fasteners shall be of a type suitable for hand welding by the applicator. The fastener description must be submitted with the quotation.

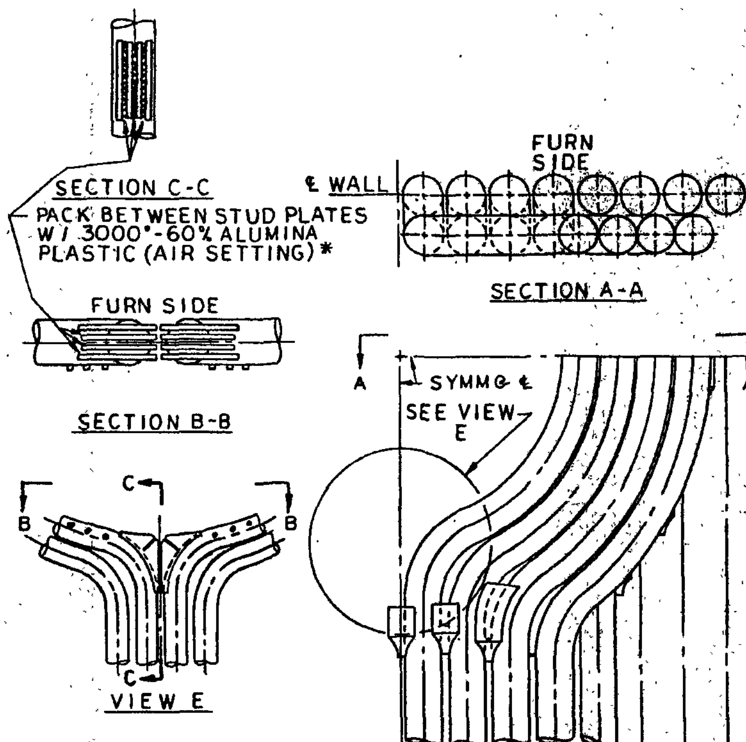
B&V 9255.62.3401.06-10264

THE BABCOCK & WILCOX COMPANY

BRICKWORK & REFRACTORY - DOORS

REVISIONS				MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.	

*ACCEPTABLE 3000° REFRACTORY PLASTICS AIR SETTING WITH 60% ALUMINA.
H-W APACHE PLASTIC CS
PLIBRICO 60 AB
KAISER MONO-60 AIR SET
PYRAMID 60 (INTERPACE CORP.)



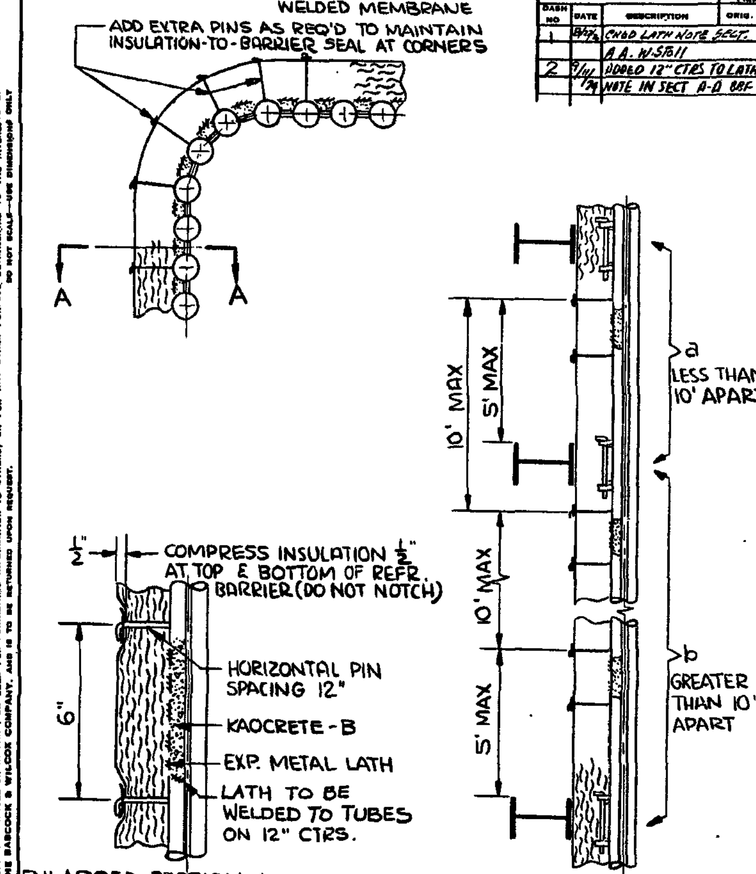
SECTION 44T

DWN BY Mullinax	CHK'D W. Stoll	WALL OPENING FOR RB ACCESS DOOR	SCALE — DATE 9/12/83
PASSED BY W. Stoll	APP'D		DRWG. NO. 147406 A-0

FORM BDM 1067 A-A

THE BABCOCK & WILCOX COMPANY
POWER GENERATION DIVISION
BRICKWORK & REFRACTORY
BOILER & FURNACE WALLS
WELDED MEMBRANE

REVISIONS				MICRO-FILM
DASH NO	DATE	DESCRIPTION	ORIG.	
1	8/7/75	CHGD LATH NOTE SECT. A-A. W.Stoll		
2	9/11/79	ADDED 12" CTRS TO LATH NOTE IN SECT A-A BBF		



SECTION 45H

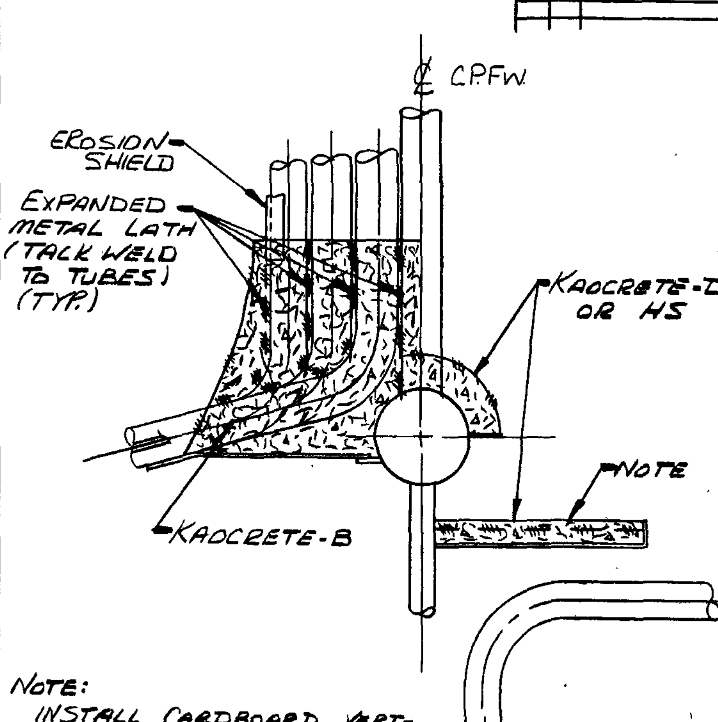
DWN. BY B.B.F	CHK'D L.W.F	HORIZONTAL BARRIERS RB BOILERS	SCALE DATE 3-6-73
PASSED BY R.E.L.	APP'D A.B.P.		DRWG. NO. 97129 A-2

LOCKED DRAWER DRAWING

FORM BDM 1067 A-2

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

REVISIONS				MICRO-FILM
DASH NO.	DATE	DESCRIPTION	ORIG.	



NOTE:
INSTALL CARDBOARD VERTICALLY IN EXPANSION SLOT OF PANS TO BREAK UP CONTINUITY OF REFRACTORY ACROSS WIDTH OF BOILER.

SECTION 467

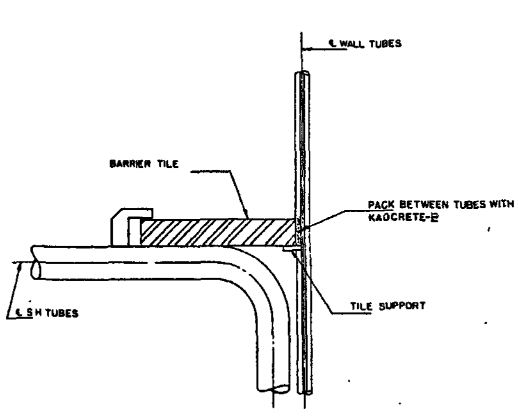
DWN BY PLIS	CHK'D —	INSULATION DETAIL	SCALE NTS DATE 4-20-83
PASSED BY Kaelyn	APP'D Bauhle		DRWG. NO. 158790 A-0

FORM BDM 1067 A-4

THE BABCOCK & WILCOX COMPANY (FPG)
BOILER DIVISION
INSULATION
DESIGN

FURNACE & BOILER WALLS
SUPERHEATER GAS BY-PASS BARRIERS

REVISIONS		MICRO-FILM
DASH	DESCRIPTION	ORIG.
1	CHGD KAOCRETE X to 5 B.BF 1-8 62	
2	REVISED 12-12-63 FA	
3	REVISED	
4	CHGD KAOCRETE 5 TO B 3-4-71 BBF/LWF	



SECTION - 47S

DWN. BY WATHEN	CHK'D. SCHELL	INSULATION DETAILS	SCALE NTS INCHES = 1 FOOT
DATE 12-27-60	APP'D.		36596 A-4

THE BA & WILCOX COMPANY
POW ENERATION GROUP

RB-614
* RB-615

INDEX OF DRAWINGS IN FOLDER

DRAWING	DESCRIPTION	SECTION
*** 146750A-0	Access Door	44C
*** 146752A-0	Corner Door	44G
*** 146757A-0	Access Door	44H
*** 146754A-0	Refr. @ Sootblower Opening	44Q
*** 146755A-0	Refr. @ Sootblower Opening	44R
*** 146756A-0	Refr. @ Sootblower Opening	44S
*** 146748A-0	Furnace Hopper Wall Tubes	70P
**** 147406A-0	Wall Opening for RB Access Door	44T
*****158510A-0	Insulation Detail	404A

*****Rev. 8-3-84
*** Rev. 6-24-83
**** Rev. 9-30-83

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

RB-614
* RB-615

INDEX OF DRAWINGS IN FOLDER

DRAWING	DESCRIPTION	SECTION
*** 146750A-0	Access Door	44C
*** 146752A-0	Corner Door	44G
*** 146757A-0	Access Door	44H
*** 146754A-0	Refr. @ Sootblower Opening	44Q
*** 146755A-0	Refr. @ Sootblower Opening	44R
*** 146756A-0	Refr. @ Sootblower Opening	44S
*** 146748A-0	Furnace Hopper Wall Tubes	70P

*** Rev. 6-24-83

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

RB-614
* RB-615

APPLICATION DRAWINGS

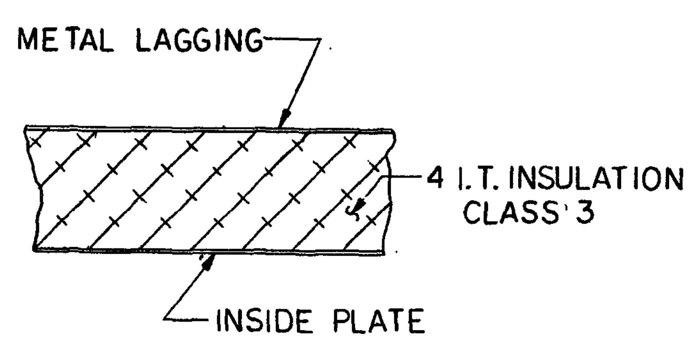
	3728A-5	Double Layer Block
**		
	3731A-4	Block Over Stiffeners
*		
	9938A-13	Casing and Inner Insulation Support
	23565A-8	Block Behind Buckstays
	23578A-6	Single Layer Block
	23579A-3	Tubes & Pipes Under 33" O.D.
	28434A-6	Lagging on Burner Windbox
	28438A-5	Lagging on Tubes & Pipes
	28445A-1	Lagging on Drum Head
	29253A-2	Blanket Insulation
**		
	39732A-2	Lagging @ Access Doors
	39734A-9	Lagging Attachments
	44433A-3	Handhole Opening Covers
	44437A-1	Wire Lacing
	64419A-4	Safety Valves
	77802A-2	Gas Tight Dampers
	82143A-5	Lagging Buckstay Connection
**		
**		
**		
**		
	97086A-2	Leaf Expansion Joints
	97089A-0	Lagging @ Buckstay Corners
	97101A-0	Thermocouples
	133858A-5	Level Transmitter
**	133898A-3	Water Gauge Assy, Drum Mounting, Yarway
	146703A-0	Metal Lath over uninsulated Drum Mtg.,Pipe & Assy.
**	146742A-0	Typ Thermocouple within Insulated Enclosure

**Rev 6-24-83
*Rev. 4-20-83

B&V 9255.62.3401.06-10264

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

REVISIONS				MICRO-FILM
DASH NO	DATE	DESCRIPTION	ORIG.	



SECTION I.T.P-4.0

K&E NO. 19-1253

DWN. BY ADAMS	CHK'D W. Stoll	INSULATION DETAIL	SCALE -H-	DATE 10-10-7
PASSED BY	APP'D		DRWG. NO. 93214	A-0

▲ LOCKED DRAWER DRAWING

FORM BDM 1087 A-4